Washington Economic Development Commission

Building a World-Class Innovation Ecosystem

Winning Strategies for Driving Growth, Competitiveness and Job Creation in a Time of Fiscal Constraint

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The **WASHINGTON ECONOMIC DEVELOPMENT COMMISSION** is an independent, non-partisan commission charged by the Legislature with the mission of creating a comprehensive statewide strategy to guide investments in economic development, infrastructure, workforce training, small business assistance, technology transfer, and export assistance. The WEDC membership comprises business, labor, academic, and association and government leaders. In carrying out this legislative mandate and related responsibilities the WEDC will:

- Provide leadership, guidance and direction to the Governor and Legislature on a long-term and systematic approach to economic development.
- Formulate a common set of outcomes and benchmarks for the economic development system as a whole and measure the state's economic vitality.
- Define public, private and philanthropic sector roles and best practices ensuring Washington captures the next generation of technology investment and global market opportunities.
- Provide a forum for geographic and industry cluster "institutions for collaboration" to build stronger partnerships.



Executive Summary

Our state is at a critical juncture. There are clear signs that our economy is starting to recover from the Great Recession, creating new business and employment opportunities across all areas of the state. However, the long term outlook is still uncertain and the overarching imperative for accelerating the recovery is the implementation of an integrated and comprehensive strategy for sustained growth.

This report updates our first strategy report, *The Washington Innovation Economy* (February 2009). We assess our progress, benchmark Washington's economic performance and offer our latest recommendations for economic transformation to the world's greatest innovation ecosystem.

The first step in transforming our economy is to be realistic about the challenges. Not only do we have to restore the thousands of jobs lost to the recession, we also have to create thousands of new jobs over the coming decade. It's clear that in many industries the same jobs will not be coming back. Equally clear is the futility of hoping for "cyclical recovery" – simply hanging on to the coattails of a national economic recovery would be a short-sighted.

By transforming our economic development model and the policies that drive it, we can take advantage of immediate opportunities and position our state for long-term economic growth. This transformation requires a thoughtful approach to setting priorities in a time of fiscal constraints – so that we don't overlook important fundamentals of long-term prosperity. It also requires collaboration among business, government, research and education; policy creativity; and strong leadership.

We call this transformative process *building an innovation ecosystem* – an economic environment in which strategy, collaboration, creativity, and leadership coalesce to help grow businesses – and jobs.

The architecture of the innovation ecosystem must be driven by private- sector jobs, and fueled by investment in innovation, new workforce skills, modern infrastructure, and exports. This requires a fundamental reset of policy focused on the talent we need, innovating in high-potential areas, producing and manufacturing more of what we invent, and exporting more. No single institution will lead the way. The next economy will be led not from the top, but from the bottom up.

We see an opportunity for leaders in business, government, research, and education across Washington to step forward to implement revolutionary – not incremental – change. Countless organizations, communities and innovators, thinking and interacting within a larger system, of which they are a part, will evolve the innovation economy. This capability of seeing the economic development system as a whole – and collaborating across boundaries – will be the essential insight and tool for the state's future prosperity.

The pillars of our future prosperity – talent and workforce, investment and entrepreneurship, infrastructure and regulations, international business and smart regulation – require clarity of vision and alignment of efforts. With such leadership, public and private sector confidence will grow, and our state's growth and job creation will increase.

Building a World-Class Innovation Ecosystem



Our competitive strength depends on our capacity for knowledge creation, a business climate conducive to transforming knowledge into successful products and services, and an effectively trained workforce. We also need a modern infrastructure and smart regulations that support productivity, growth and expansion of global trade.

The Commission's recommendations in this report are not all dependent on new funding; what is more important is making state polices and funding more predictable and more flexible. In particular, we call for more "local leadership" and financing tools at the regional level to raise necessary capital for each region's unique economic development objectives and priorities. We also consider it essential for the business community to take a more active strategic leadership role for the industries and clusters in which they participate. If the recommendations are successfully implemented, we are confident that business performance will be enhanced, jobs will be generated, higher wages will be paid, and exports will increase.

Our vision for Washington is a place where citizens have access to the best learning resources in the world and are encouraged to capitalize on their abilities to create prosperity for themselves and for others. It is a place that has a global outlook, looking to emerging markets and nurturing collaboration across its diverse geography and industry clusters. It is a place that is a magnet for creative and entrepreneurial people and enterprises – where innovation is open and everyone can participate and share in its benefits. If we get it right, we have outstanding potential for economic, job and income growth. A summary of our updated recommendations to realize this vision follows.



Summary of Recommendations

Washington's global competitiveness hinges upon how well our innovation ecosystem functions. The strength of this ecosystem depends on how well we move forward on four key pillars of the innovation economy, summarized below.

Pillar One: Harness Talent to Win the Future Skills	*Solutions*
Future Assumptions: • **Talent is the principle driver of the innovation economy.** • **Productivity and earning capacity will increasingly be tied to skill levels. Wages will remain flat or decline for those with a poor education and few skills.** • **Washington will remain attractive to immigrants, most of whom bring high education and skill levels with them. This will require state residents to compete with national and international talent pools.** • **Washington's education system needs adequate resources to meet immediate business needs and to underpin, long-term economic recovery.**	1. **Recommendation:** Expand the capacity of community and technical colleges and four-year universities and colleges to achieve a post-secondary education attainment rate to at least 60 percent (degrees and credentials) of the working-age population by the year 2025 to ensure a productive workforce and meet high-demand industry needs. 2. **Recommendation:** Prioritize career and technical education programs at the high school level through more interaction with business, support of skill centers, and making use of industry standards for curriculum development and career guidance. 3. **Recommendation:** Attract and retain the world's best and brightest minds and entrepreneurs to fill critical skills gaps and grow new enterprises, including greater funding for higher education tied to high demand programs and fact-based visa related reform. 4. **Recommendation:** Expand flexibility of unemployment programs to fund skill development and training of dislocated workers and the long-term unemployed.



Pillar Two: Invest in Entrepreneurship and Small Business	*Solutions*
Future Assumptions: • **Economic growth and job creation relies increasingly on commercializing new knowledge into globally competitive products, processes and services.** • **University research centers, federal labs and private R&D teams need to be connected to a responsive and robust innovation ecosystem, with a focus on local/regional manufacturing investment.** • **Access to business expertise and risk-tolerant capital are essential for rapid technology deployment.**	1. **Recommendation:** Target improvements to regulatory and tax policy to foster business development and job creation. 2. **Recommendation:** Accelerate innovation by proactive support of small business and the best entrepreneurial ideas and talent. 3. **Recommendation:** Enhance the Washington innovation ecosystem through large-scale collaboration and competing aggressively for federal, foundation and investment funding.



Pillar Three: Modernize Infrastructure and Regulations	*Solutions*
Future Assumptions: • **Overall levels of public infrastructure spending will likely fall as stimulus programs wind down and the public sector addresses fiscal restraints.** • **Freight mobility is a growing problem for manufacturers and supply chain efficiency.** • **Infrastructure investments will give higher priority for economic development objectives. Various economic, national security, climate and technological trends will accelerate the transition to alternative energy sources and electric transportation systems.** • **Communications infrastructure will continue to be primarily a private-sector activity.**	1. **Recommendation:** Develop alternative, sustainable financing mechanisms for transportation infrastructure to ensure basic asset preservation and investment in critical economic corridors to expedite commerce and trade. 2. **Recommendation:** Prioritize infrastructure investments of national significance that can make Washington a global leader in areas such as energy efficiency, clean-water solutions, advanced manufacturing, sustainable in urban design and broadband deployment. 3. **Recommendation:** Require the use of economic development and sustainability criteria in the capital budgeting process and selecting project investments.



Pillar Four: Expand International Business	*Solutions*
Future Assumptions: • **Globalization – the interconnectedness of markets for goods, services, capital and labor –continues to intensify over time, but at an uneven and unpredictable pace.** • **State capitalism (e.g. China) is rising as a source of competition.** • **Washington ports will confront more competition from Canada, California and East Coast ports as the Panama Canal is widened and new Arctic shipping lanes possibly open.** • **Slow economic recovery in the United States and uncertainty in global markets will increase protectionist pressure and threaten to escalate trade disputes into high-risk trade wars.** • **State fiscal constraints will challenge policymakers to seek creative new partnerships with the private sector to promote export growth.**	1. **Recommendation**: Intensify innovation collaboration in the Pacific Northwest economic region by supporting cross-border research and development projects that can lead to commercialization, diversification and expansion of trade opportunities. 2. **Recommendation:** Optimize through private sector leadership the state's existing export assistance ecosystem by providing a coordinated suite of demand-driven suite of services and global trade connections available to Washington state companies. 3. **Recommendation:** Strengthen export assistance services and re-establish overseas representation to augment Washington's international competitiveness and realize the state's export goals. 4. **Recommendation:** Double the number of state-led, new-to-market, cluster-based trade missions (including services industries) to increase the number of new-to-market exporting firms.



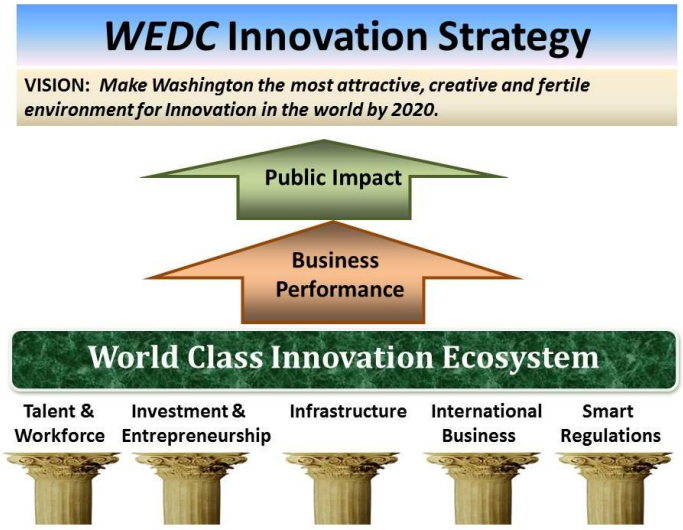
Pillar Five: Move to Smart Regulations	*Solutions*
Future Assumptions: • **Regulatory processes impose significant costs on doing business and significantly influence investment behavior, location decisions, start-up activity, expansions and hiring.** • **Regulation is not only about the rules, but *compliance*. Streamlining saves costs without compromising the protections intended.** • **A smart regulatory system can simultaneously facilitate innovation, economic growth and efficiently achieve regulatory objectives.**	1. **Recommendation:** Implement an "across government" strategy to dynamically move toward a smart, high quality regulatory system that promotes innovation, lowers business costs, provides predictability and efficiently supports regulatory objectives. 2. **Recommendation:** Expand agency use of lean process improvements to lower the cost of regulatory compliance and reduce time delays. 3. **Recommendation:** Create "concierge service" for industry engagement and a comprehensive, well-designed, interactive online portal to navigate regulatory compliance as recommended by State Auditor's Office Regulatory Reform report. 4. **Recommendation:** Create a legislative task force to review annually by industry sector—in conjunction with the State Auditor's Office and Joint Legislative Audit and Review Committee (JLARC) –all regulations at the state level and determine overlaps, excessive costs, obsolescence, redundancy, and recommend solutions.



I. Introduction

In 2009, the Washington Economic Development Commission launched an ambitious vision for economic development to "make Washington the most attractive, creative and fertile environment for innovation in the world by 2020 as a means of achieving long-term global competitiveness, prosperity and economic opportunity for all the state's citizens."

In short, innovation is an idea implemented. When widely supported as a top policy priority, innovation transforms knowledge into new value and raises standards of living. All industries in all regions of the state can engage in innovation, whether they are established industries or yet to be born. An innovation-based strategy for economic growth, job creation and higher standard of living goes far beyond the traditional recruitment, expansion and retention activities of economic development organizations. The strategy rests on strengthening four interrelated pillars – talent and workforce, investment and entrepreneurship, infrastructure and regulations, and international business.



New Economic Development Model

The adjacent table points out the basic differences between a traditional model of economic development and an innovation-driven model. The state will continue to attract and retain employers as opportunities arise, but current best practice suggests a new emphasis on the quality of inputs and on facilitating innovation outcomes as the driver of long-term growth, competitiveness and employment. In many ways this is the contrast between the "hunter-gatherer" model and the "gardening" approach to economic development.

New Economic Development Model

Traditional Model	Innovation Driven Model
Attracting companies	Investing in talent, ideas and infrastructure
Jobs	Incomes
Top down development	Bottom-up organic growth
Closed innovation	Open innovation
Competing regions	Collaborating regions

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WEDC Accomplishments

Legislative Authorization of WEDC Innovation Strategy. Making Washington the leading hotspot for innovation in the world was incorporated into legislation (SSB 5741), with overwhelming support of the House and Senate and signed by Governor Gregoire on May 10, 2011. The legislation bolstered WEDC's role in strategy, aligning agency programs and evaluating program outcomes. Commission membership was also expanded to include two new agencies (Agriculture and Transportation) and additional private sector, trade and labor representatives. See *Appendix 1* for the legislative mandates and tasks.

Bottom-Up Innovation Partnerships. The WEDC collaborated with Commerce Department in designating a network of 15 Innovation Partnerships Zones (IPZ) to create new innovation capacity and accelerate growth of industry clusters. IPZ designations are awarded on the strength of collaboration between research entities, the private sector and work force training and the quality of a business plan. IPZs receive no direct funding yet are effective in branding and leveraging financial resources. In 2012 the IPZs were awarded $13.5 million for capital projects, including a wine research and education facility in the Tri-Cities, a clean-water technology lab in Tacoma, a bio-medical incubator in Bothell, and an energy technician program in the Walla Walla for maintaining 5,000 wind turbines. IPZs received national recognition by the National Governors Association Center for Best Practices and a first place Innovations Award from the Council of State Governments. See *Appendix 2* for a more details on the IPZ program and designated zones.

Strategic Targeted Academic Research (STARS). In partnership with the state's research universities the WEDC launched world-class entrepreneurial research initiatives in three areas: 1) nanophotonics (UW); 2) bio-products, including aviation bio-fuels (WSU); and, smart grid technology and applications (UW and WSU). All three initiatives are leveraging federal R&D funds, building new industry partnerships, generating intellectual property with high commercial potential, and making the state innovation ecosystem more globally competitive. As of 2012, six STARS had been recruited and the WEDC is chartered to recruit 10 lead STAR researchers by 2017. See *Appendix 3* for details on the STARs program.

Commercialization through Entrepreneurs-in-Residence (EIRS). The EIR program is transforming the technology transfer model to go far beyond intellectual property licensing toward launching viable business models and start-ups. More than 25 EIRS have been recruited with WEDC support to collaborate with university researchers – and dozens of potential spin-out companies are in the pipeline. Along with university initiatives such as the W fund and start-up incubators the state is well on its way to capture downstream economic benefits from its growing base of intellectual property. The first regional experiments with the EIR concept are underway in Bellingham and the Redmond IPZ in the interactive media cluster. See *Appendix 4* for examples of EIRs.

Informing Policy with Evidence. Credible economic development strategies must rest on a solid foundation of objective research. WEDC research projects have addressed the economic impact of the state's defense infrastructure, federal R&D and contracting opportunities, challenges facing the manufacturing sector, transportation electrification, benchmarking Washington's performance, assessing the state economic development system and surveying agency evaluation practices. WEDC boosted its research capability by hiring its first policy director tasked with completing state-of-the art outcome evaluations of economic development programs. See *Appendix 5* for summary research projects completed and links to reports.



II. Economic Context: Where are We Now?

Like much of the U.S., Washington's recovery has been slow and anemic, with absolute non-farm employment still well below levels just prior to the onset of the 2007 to 2009 recession. Each state in the union experienced an employment "nadir" at different times. [1] Washington experienced its own low point in February 2010, when non-farm employment fell to just 2,775,900 workers, roughly 181,400 workers below employment in December 2007 and 198,300 workers between Washington's recent peak employment in April 2008 and February 2010. After 57 months, non-farm employment is still 74,770 jobs below peak its peak level in 2007 (based on a three month moving average; see **Figure 1**). The massive federal stimulus funding temporarily helped the state's fiscal situation and helped contain damage and lessen job losses.

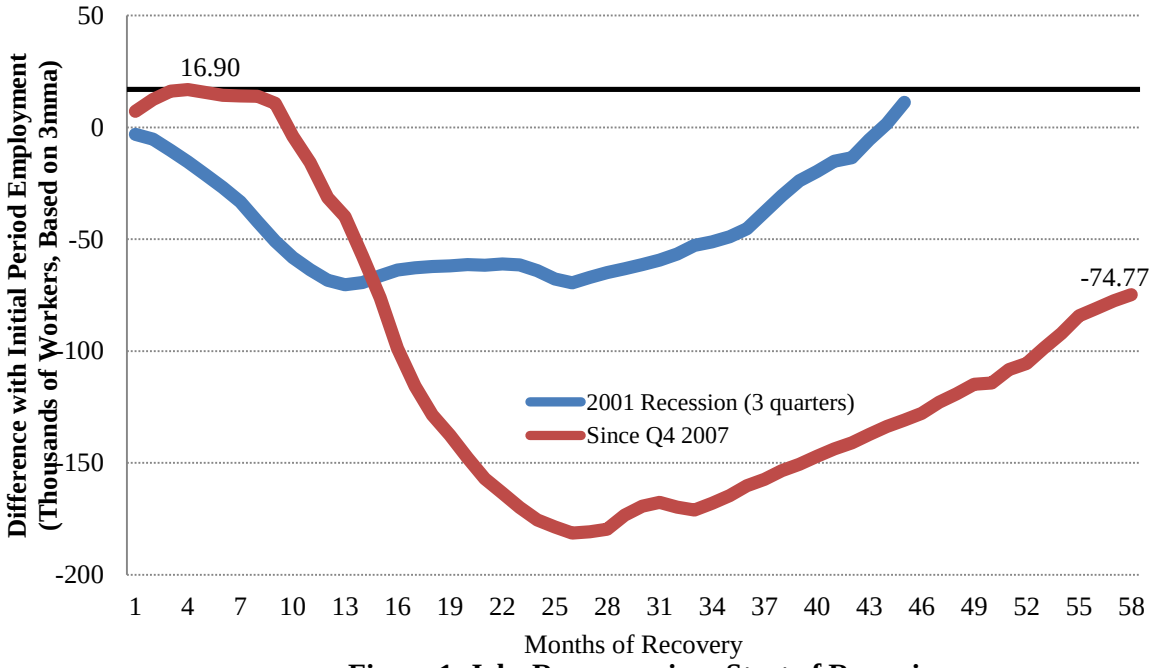


Figure 1. Jobs Recovery since Start of Recession

However, long-term and sustainable job growth requires actions in line with new policy priorities. The biggest need and opportunity for the state is to emerge successfully out of this recession with a fully integrated strategy for sustained growth. Doing so requires a thoughtful approach to setting priorities in the context of fiscal constraints lest we neglect important priorities for the long- term prosperity we want to achieve.

[1] For instance, 57% of all states (29 in total) experienced their lowest point (since the onset of the national recession in Q4 2007) in non-farm employment in either February or March of 2010, almost a year after the Bureau of Economic Analysis (BEA) estimated the recession ended, based on measures of quarterly real gross domestic product (GDP).



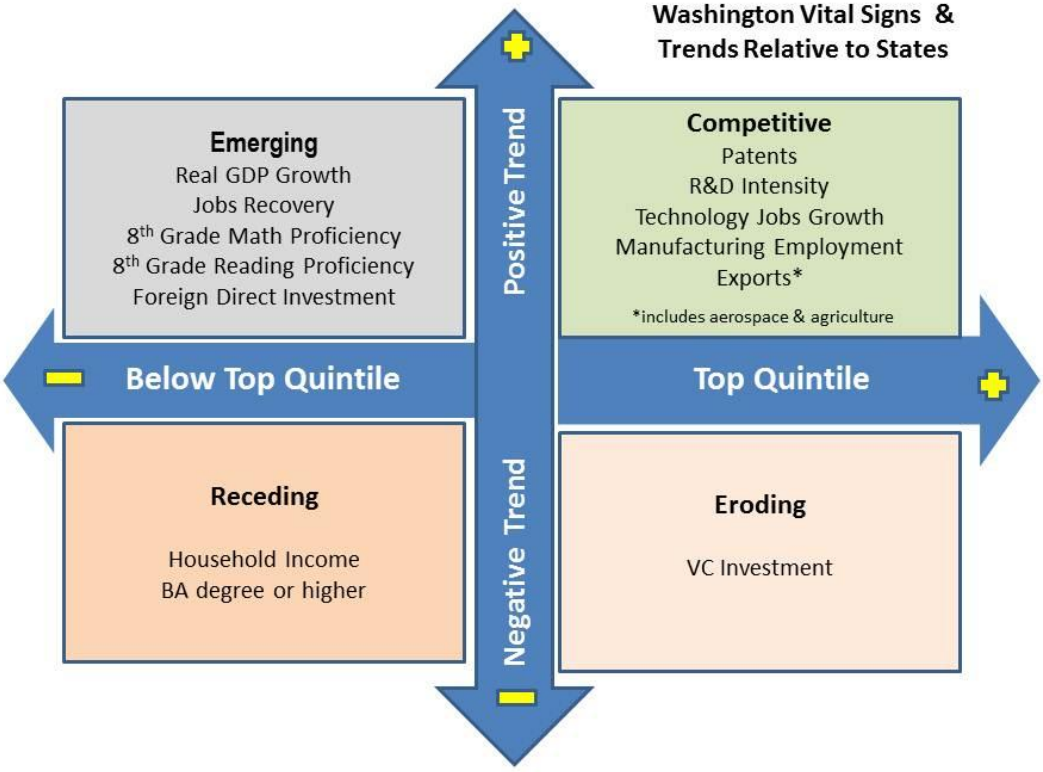
Benchmarking Washington's Performance

Washington's economic vitality hinges upon how well our innovation ecosystem functions relative to other parts of the world. The competitive strength of our ecosystem depends on our capacity for knowledge creation, a business climate conducive to transforming knowledge into successful products and services, effectively trained workforce and an efficient infrastructure and regulatory system.

The concept of an innovation ecosystem is by definition multi-dimensional and ever-changing. As such, linkages to broader economic goals suffer definitional and data-collection issues, and is not always easy to measure. Nonetheless, we can provide a context for assessing Washington's status and direction on some commonly accepted performance metrics (**Table 1**). These metrics are not perfect measures, but they do serve as proxies on Washington's competitiveness and trends across a range of categories, taken from various U.S. federal data sources. We assume that investment in innovation-based factors will result in a continuous cycle of increasing returns to scale, higher-paying jobs and spillover effects that increase the prosperity of the state. Our ability to excel will depend on how well we leverage these innovation factors relative to not just other states, but to the entire world.

Table 1: How Washington Performs Relative to Other States

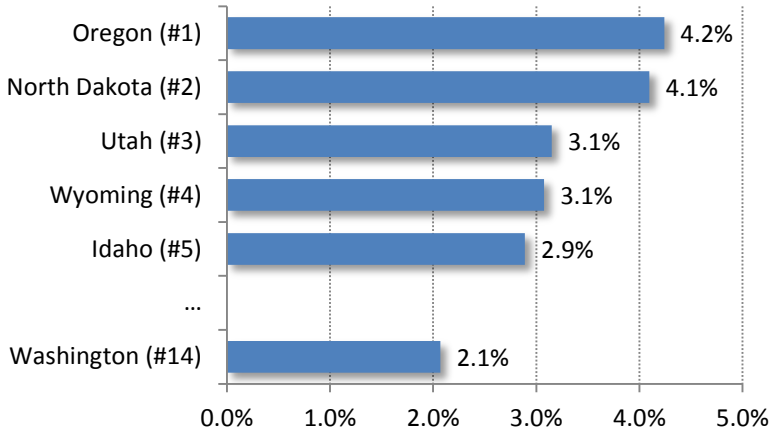
See detailed metrics in Appendix





Real GDP Growth

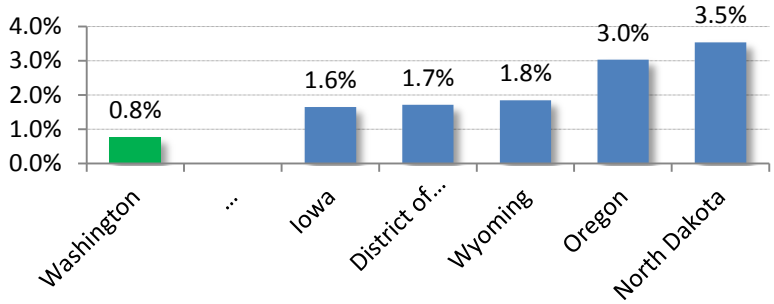
Figure 1. Real GDP Growth
Trendline, 2000-2011



Washington's real gross state product grew between 2000 and 2011 at a 2.1% trend line growth rate, 14th fastest among the states. (**Figure 1)**. This compares with an overall 1.5% trend line growth for the US. Private sector real GDP grew slightly faster over this period, at a 2.2% trend line growth (ranked 17th).

Real Per Capita GDP

Figure 2. Trend Line Growth in Real per Capita GDP, 2000-2011



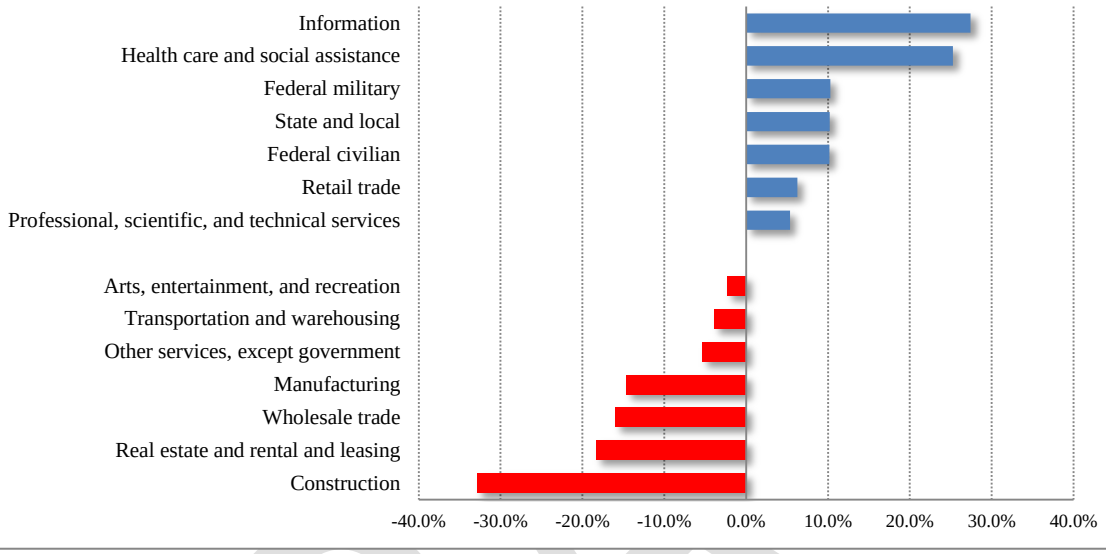
In 2011, Washington's ***real per capita GDP*** (inflation-adjusted, chained to 2005 dollars) was $45,520—fifteenth highest in the U.S. Taking the trendline, Washington grew 0.8% per year between 2000 and 2011, good for twenty-fifth fastest in the U.S. (**Figure 2**). Over the 1997 to 2010 period, Washington's fastest growing sectors were in information and data processing services (15.0% trend line), computer systems design and related services (8.3%), and water transportation (6.6%). Within the manufacturing sector the fastest growing subsectors in Washington over this period were computer and electronic product manufacturing (22.3% growth), followed by machinery manufacturing (7.0%) and petroleum and coal products (6.4%).[2]

[2] Data source: U.S. Bureau of Economic Analysis (BEA).



Composition of Growth

Figure 3. Largest Drivers and Drags on Real GDP, Washington, 2007-2010



Data source: U.S. Bureau of Economic Analysis.

Between 2007 and 2010 the largest drivers of real GDP growth in Washington by sector were information, healthcare, all three levels of government, retail trade, and "professional, scientific, and technical services."[3] The information sector—which includes software publishing and telecommunications—and healthcare were by far the largest drivers, contributing 27.4% and 25.3%, respectively. The biggest drags on growth were construction, responsible for nearly a third of gross output contraction, followed by "real estate and rental and leasing" and wholesale trade (**Figure 3**).

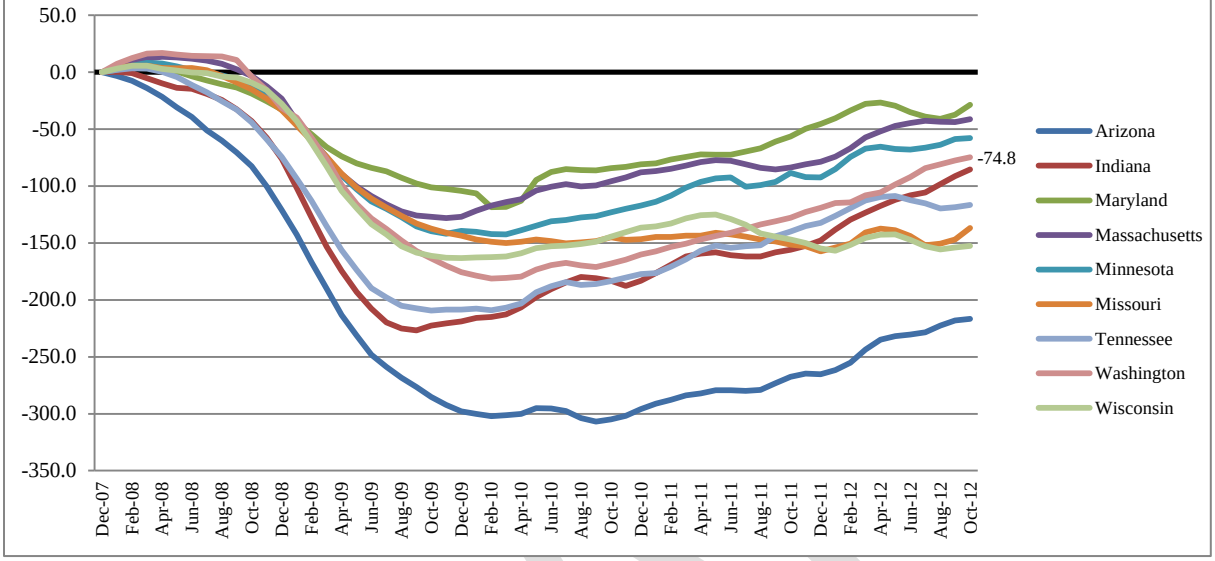
Real output in manufacturing during the 2007-2010 period fell 4.0%. The biggest drag was from transportation equipment but recent trends have reversed with the successful delivery of the first Boeing 787s and new aerospace orders now being completed. The largest driver of durable goods output during this period was in computer and electronic product manufacturing, growing 71.9%.

[3] For real GDP "y" for industry "i" and year "j," for all cases in which $(y_{i,j=2010} - y_{i,j=2007}) > 0$, the contribution of y_i to overall gains in real GDP for Washington, Y, is equal to $(y_{i,j=2010} - y_{i,j=2007}) / \sum_{i=1}^{n} (y_{i,j=2010} - y_{i,j=2007})$ for all $(y_{i,j=2010} - y_{i,j=2007}) > 0$. To calculate for industries with a net drag on real GDP, the opposite cases are used.



Jobs Recovery

Figure 4. Jobs Recoveries for Select States



Data source: U.S. Bureau of Labor Statistics

Only six states have recovered the jobs lost since the recession ended. Washington's recovery, with some notable sectorial exceptions, is slow and anemic, with absolute non-farm employment still well below levels just prior to the 2007 to 2009 recession. Each state experienced an employment "nadir" at different times. Washington experienced its own low point in February 2010, when non-farm employment fell to just 2,775,900 workers, roughly 181,400 workers below employment in December 2007 and 198,300 workers between Washington's recent peak employment in April 2008 and February 2010 (**Figure 4**).

Employment by Sector[4]

Information and communication technology. Washington's information and communication technology (ICT) sector reached a new peak in 2011, with 124,440 workers. This placed Washington as the eighth largest state for ICT employment, but well behind California (548,108), Texas (313,912), and Virginia (200,167). However, among the ten largest states for ICT employment, between 2002 and 2011 Washington was one of only two states with trend-line positive growth. Between 2010 and 2011 the average ICT wage in Washington increased by $7,347, the largest absolute increase in the U.S. And between 2004 and 2011, Washington's absolute increase in wages—41.6%—was the largest increase in the U.S.

[4] Note the following limitations with this approach: 1) this data does not capture benefits paid out by employers; 2) it does not capture labor hours of input, precluding labor productivity estimates; 3) the data does not differentiate between part-time versus full-time employees; and 4) it does not capture sole proprietorships.



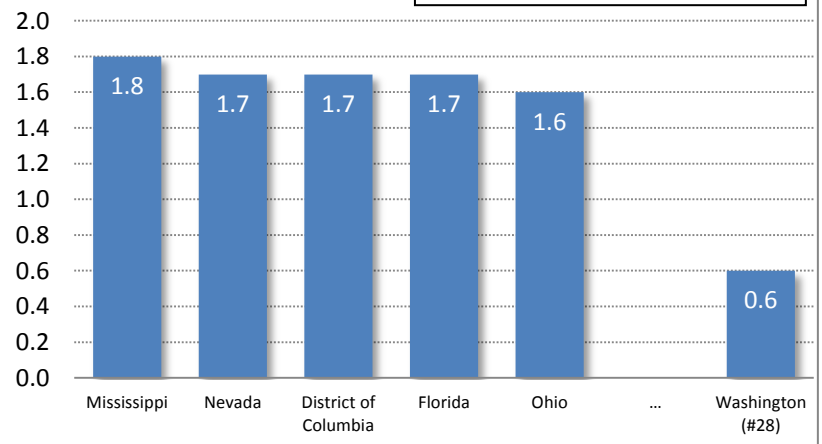
Manufacturing. Overall, manufacturing employment in Washington has done much better than the U.S. average, largely due to the upsurge in aerospace. Between 2004 and 2011, overall manufacturing employment grew 2.4%, the 2nd highest rate of growth in an industry that has been on the downturn in employment for years. The biggest drags on employment came from wood products manufacturing (23.1%), furniture and related (12.3%), and computer and electronic products (11.4%).[5] Among these three subsectors a total of 13,000 jobs were lost over this period, compared with an addition of 5,540 jobs among the top three largest drivers of employment growth in manufacturing.

Life Sciences. Recent reports by the Washington Biotechnology and Biomedical Association (WBBA) found that the life sciences industry employment in Washington grew nearly 9% between 2007 and 2011. The report found that the life sciences industry is the 5th largest employing sector in the state, and growing, with 33,519 direct jobs in 2011, while as many as 57,000 additional jobs across the state. Between 2007 and 2011, research and development in biotechnology was the largest driver of employment growth, growing 53.3% and contributing 46.2% of all employment gains in the sector during this period.

Unemployment

Figure 5. Unemployment Rates by State
Largest reductions in rate, year-over-year, August 2012 (ppts)

Data source: U.S. Bureau of Labor Statistics.

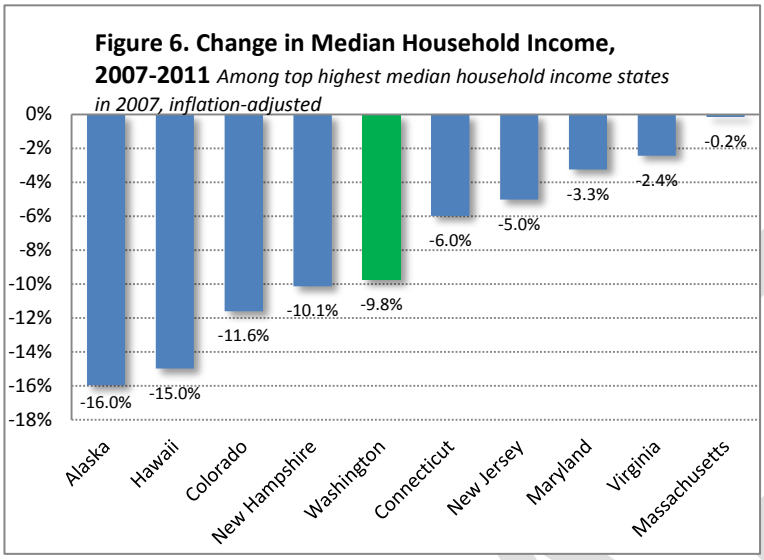


Unemployment in Washington has remained one of the highest in the U.S., with a seasonally adjusted rate of 8.6% in August 2012, 36th highest in the U.S. Washington did slightly better against other states in its reduction in unemployment—between August 2011 and August 2012, the state's unemployment rate fell 0.6 percentage points, 28th best over the period (**Figure 5**).

[5] We calculate gross contributions to either growth or contraction by the following: for employment level "y," industry "i" and year "t," if $(y_t - y_{t-1})_i > 0$, then contribution to gross gains $C^+ = (y_t - y_{t-1})_I / \sum_{i=1}^{n} (y_t - y_{t-1})_i$ for all cases when $(y_t - y_{t-1})_i > 0$. Calculation for contribution to gross losses is simply the sum of cases when $(y_t - y_{t-1})_i < 0$.



Income



Between 2007 and 2011, Washington's median household income fell 9.8%, the fifth largest decline among the ten wealthiest states by this measure in 2007 (**Figure 6**). Massachusetts saw the smallest absolute decline (-0.2%), while Alaska and Hawaii had overall reductions of 16% and 15%, respectively. The largest year-over-year decline for Washington during this period was between 2009 and 2010, when median household income fell 8.5%; between 2010 and 2011, income fell 1.9%.[6] Personal income, which includes wage and salary earnings plus interest, dividends, and other non-wage income sources, grew (in nominal terms, i.e., unadjusted for inflation) at approximately 4.1% between 1990 and 2011,[7] only twenty-fourth highest among all 50 states plus Washington D.C. Over the recessionary period 2008 through 2010, approximately 19.6% of all personal income earned in Washington came in the form of interest, dividend, and rent payments, the eighth highest in the U.S. (just ahead of California, but well below Florida, at 25.9%); the U.S. average over this period was 17.6%.

Overall Innovation Performance

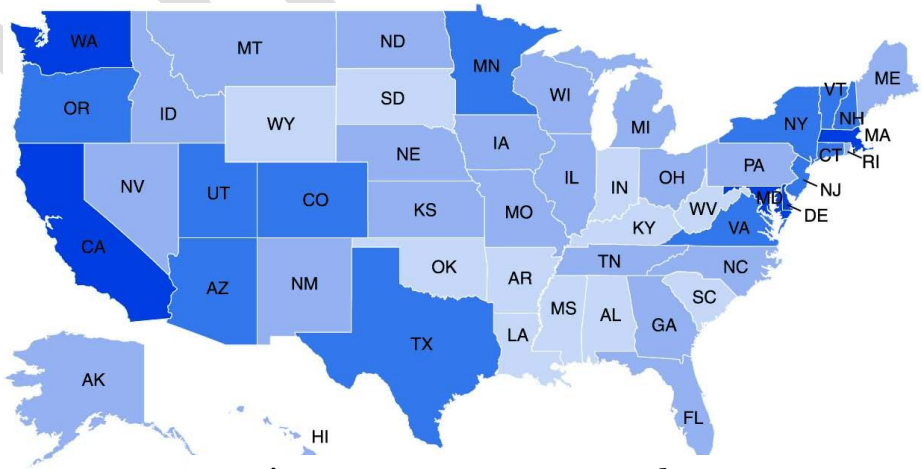


Figure 6 –2012 New Economy Index

[6] Data source: U.S. Census Bureua.
[7] Based on slope of natural log of annual per capita personal income, from 1990 to 2011.



The most comprehensive composite index of how Washington is performing in innovation is the state New Economy Index. This index comprises indicators across five domains: knowledge-jobs, globalization, economic dynamism, digital economy and innovation capacity. Massachusetts (1st), Delaware (2nd) and Washington (3nd) *top the list of states leading the push* for a global innovation based economy. (**Figure 6**).

Among the innovation strengths noted for Washington in the disaggregated index were scientists and engineers(1), patents (1), on-line population (3), information technology jobs (4), export focus of manufacturing and services (4), managerial, professional and technical jobs (5), movement toward a green economy (5), fast growing firms (6), and venture capital (6). Some weaknesses in the index included initial public offerings (24), e-government (25), high wage traded services (29), foreign direct investment (32) and job churning (46).

Human Capital Production

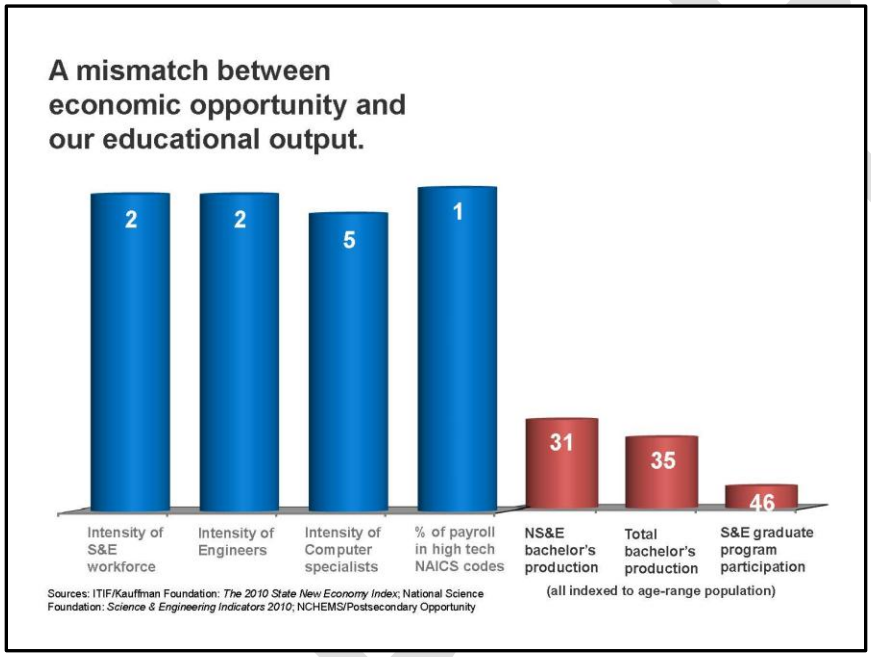


Figure 7–Human Capital Mismatch

There is a growing mismatch between the requirements of an innovation-driven economy and the production of adequately educated and trained personnel (**Figure 7**). Although Washington ranks near the top when it comes to the intensity and payroll of its science, computer engineering and high-tech workforce, it ranks poorly on production of graduates in science, technology, engineering and mathematics disciplines. Our post-secondary system is undersupplying relative to our population base – a major bottleneck in our goal to support a workforce shift toward higher skill-demanding work. One consequence is that Washington will need to rely on imported talent from around the world while education access to state residents is being limited.



Patents

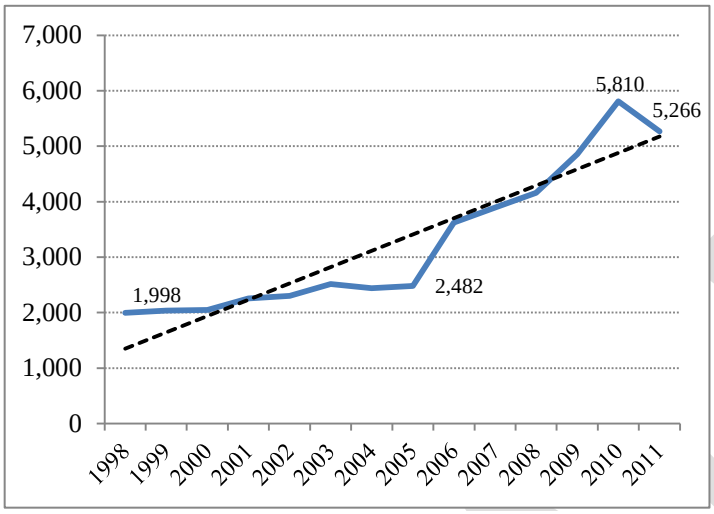
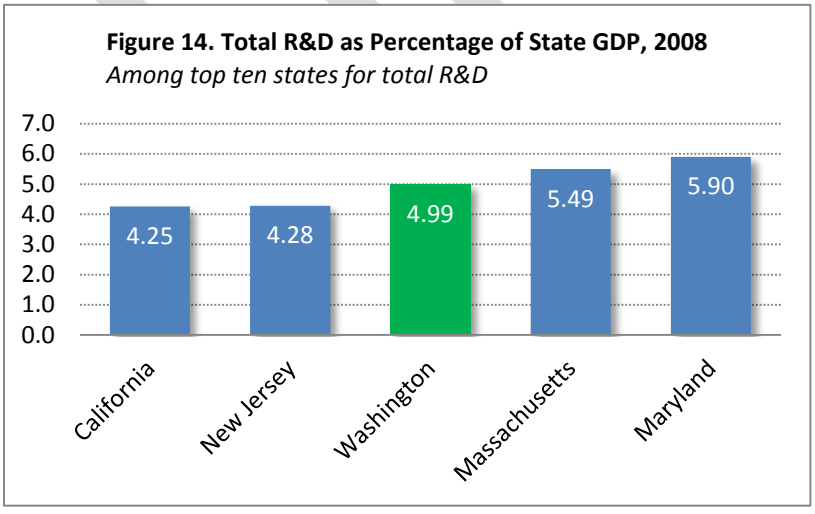


Figure 8 – Patents from Washington, All Types
Data source: U.S. Patent and Trademark Office

The vast majorities of patents never result in any commercially successful product, and are an imperfect measure of innovation. Nonetheless, they are one of the few quantifiable measures of the innovation economy. Washington has shown the strongest growth among all 50 states and the District of Columbia over the 1998 to 2011 period, in total patents (all types) and on a per capita basis. Between 1998 and 2011, annual patents have increased 164% (peaking in 2010 with 5,810 patents. (Figure **8).** Washington led all states in patent production both on a trend line basis (8.8%, more than double the rate of runner-up Oregon and nearly three times as fast as Massachusetts) and on a per annum basis (7.7%). Washington also led the way on a per capita basis between 2000 and 2011, with trend line growth of 8.6% and per annum growth of 7.5%.

R&D Intensity



R&D is often high risk, but is widely understood to be a public good with broad, positive externalities and spillover effects across the economy. Based on the most recent data (2008), among the top ten states for total R&D expenditures, Washington ranked 3rd in R&D as a percentage of gross state product (GSP). Between 2002 and 2008, Washington grew at a trend line rate of 4.9%. R&D spent as a percentage of GSP in 2008 was also the highest among all years reported (going back to 1991), and increased 0.36 percentage points between 2007 and 2008. In terms of total R&D expenditures, Washington ranked 6th with nearly $17



billion, behind Massachusetts ($21.0 billion), Texas ($20.3 billion), New Jersey ($20.7 billion), and California ($81.3 billion). From 2002 to 2008, Washington's overall R&D expenditures grew at a trend line rate of 7.7% per year, behind only Massachusetts (7.8%) among states with the highest volumes of R&D in 2002.[8]

Venture Capital

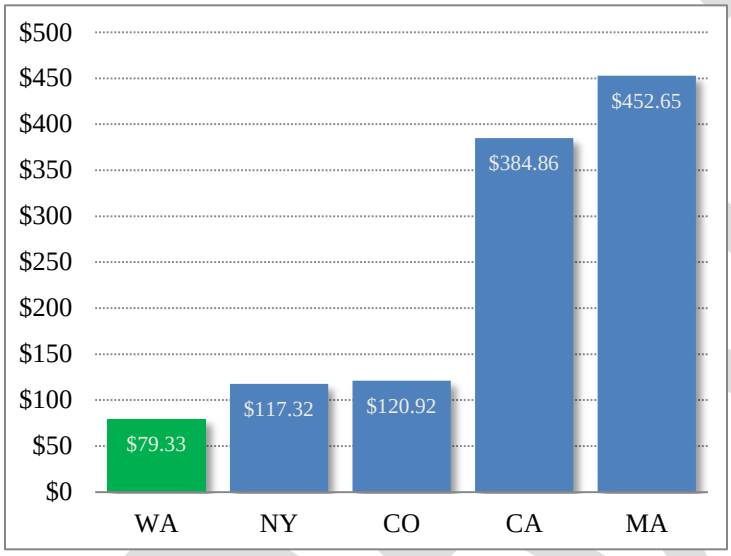


Figure 7 – Venture Capital Investments per Capita, 2011

Data sources: Northwest Venture Capital Association, U.S. Census Bureau

Venture capital financing plays critical roles in the commercialization process, helping new companies expand beyond their original base. While venture funds do not often provide early-stage financing, they are the source of funds to get firms to the scale necessary form long-term success. **Figure 7** shows the role venture funding plays in selected states. In most years, Washington ranks third in venture funding on a per capita basis, behind California and Massachusetts, the two perennial leaders. In 2011 Washington ranked 5th. However, Washington's per capita VC rate also declined from 2010 by $11.85 per resident, or 13%. The state's five year change in per capital VC investments was also negative, contracting by $83.16, or more than 51%, and down more than 59% since a recent peak in 2006. Overall volume of VC dollars also declined year-over-year in 2011, from $613.2 million to $541.8 million (a 11.6% drop). Since the most recent annual peak of $1.26 billion (in 2007), VC dollars per year have fallen 57%.

[8] Data source: National Science Foundation.



Infrastructure

Meaningful data on infrastructure is hard to locate. However, based on available data Washington ranks well compared to other states in its share of bridges deemed structurally obsolete (sixth lowest share) and 11th lowest in vehicle miles traveled per resident. However, we rank 41st for functional obsolete bridges and 16th for roads that are in "good" or "very good" condition (**Table 2**).[9]

Infrastructure Metrics	State Ranking (year)[10]
Percent functionally obsolete bridges	41 (2011)
Percent structurally deficient bridges	6 (2011)
Vehicle miles traveled per capita (resident)	11 (2010)
Roads in good or very good condition	16 (2009)

Table 2 – Infrastructure Metrics

International Business

Washington has an extensive port and international trade system. In 2011, state goods exports reached $64.6 billion, fifth most in absolute terms and third best on a per capita basis. Our port system is one of the most advanced in the country, with more than $164.1 billion in goods passing through Washington ports.[11] Washington's intermodal, integrated freight mobility system is a key asset and factor, shaping business investment decisions the efficiency of international supply chains. While services exports are not trackable at the state level on an annual basis, the state input-output model, for year 2007, estimated services exports of $28.9 billion, a 71% increase over 2002. Services exports include overseas legal and architecture contracts, software licensing, tourism, and educational services to foreign students.

Foreign Direct Investment. Washington ranked 19th in total number of workers employed in majority foreign-owned U.S.-affiliates (both bank and non-bank operations), with approximately 93,200 workers. This was a slight decline from 2008, when 93,900 workers were employed in foreign firms, though well above 2007 (when 90,500 workers were employed). As a share of total covered employment in the state, Washington ranked 33rd in 2009 (4.0%), well below Delaware (8.9%), New Hampshire (7.8%), and Connecticut (7.3%).[12]

[9] Data sources: Federal Highway Administration and Bureau of Transportation Statistics
[10] Rankings in ascending order. WA had the 6th lowest % of its bridges deemed "structurally deficient" in 2011.
[11] WISER Trade.
[12] U.S. Bureau of Economic Analysis.



Future Risk Factors

The future is uncertain. Whether it's sheer economic growth, urbanization, energy consumption, the diffusion of talent across borders, population growth, the current and next set of challenges in global health, state capitalism, or the ever-evolving global supply chain…the world is changing. Any real, meaningful strategy to grow our state economy must address these issues head on and continuously adapt strategies and tactics as possible futures unfold.

An infinite number of events could occur in the next 10 years, some with potentially profound impacts. The national economic recovery and debates over fiscal policy loom large over Washington's own economic vitality, as does the opportunities and challenges associated with China's continued rise. The implications of the continuing turmoil in the Middle East, financial problems in Europe and climate change create a very unpredictable and uncertainty future. Nevertheless business, government, workers, educators and other stakeholders must adapt and respond to these uncertain conditions. Following are a select group of risk factors that could impact the state's long-term opportunities for economic prosperity. Included are a possible range of uncertainty for each factor and how they might play out for the Washington economy.



Table 4 –Risk Factors by Scenario

RISK FACTORS	STABLE SCENARIO	VOLATILE SCENARIO
Economic growth	**High growth rate.** Sustained, strong job recovery for Washington and acceleration of innovation and new industry clusters.	**Weak or no growth**. Markets for Washington goods and services diminish. Federal deficit pressures reduce discretionary and defense programs.
Investment incentives	**Strong incentives.** Economic development policy supports rapid deployment of new technologies with a restructured and more productive education system and workforce. WA benefits because of a strong entrepreneurial ecosystem and growing portfolio of IP.	**Weak or no incentives.** Growing mismatch between needs of an innovation-intense economy and available R&D assets and skills. Investment stalls in multiple technical areas. Pool of displaced workers with antiquated skills grows. Less investment in early stage technologies and widening of the "valley of death."
Advanced manufacturing	**U.S. leadership restored.** WA leads globally in product design, advanced materials, prototyping, simulation, engineering, lean supply networks, logistics, IT integration, skill standards, on-demand learning, customer co-creation and other high value-added manufacturing activities.	**Manufacturing abandoned.** Outsourcing accelerates, not equally matched with advanced manufacturing activities in the U.S., leading to middle class job losses and continued decline of manufacturing sector. Distribution of global manufacturing alters trade routes impacting cargo volume through WA.
Energy prices	**Prices stable.** Domestic energy sources expand. Middle East tensions ease bringing oil prices down. Households spend more on non-energy goods. Energy intense firms gain productivity.	**High prices.** Supply interruptions and high prices damage recovery. More political support for alternative energy. WA attracts energy intense industry due to cheap hydropower. Electric vehicles utilization increases dramatically.
China's economy	**Fair and free trade.** China becomes a responsible power in global economy. Trade barriers are reduced; China shifts toward domestic consumption. WA exports increase along with more FDI into WA. Relative labor and resource costs advantages for WA.	**Neo-mercantilist state capitalism.** More trade barriers and trade disputes; further intellectual property theft; and potential "hot" conflicts over access to key resources. Public turns toward protectionism. Firms pull back outsourced work and trade activity declines, damaging WA export-import activity.
Healthcare costs	**Cost curve bends.** Older age distribution increases demands for healthcare but costs are controlled, helping spread coverage to all citizens. WA grows as major hub for healthcare, medical devices, treatments, and discoveries.	**Out-of-control.** Healthcare costs rise well ahead of inflation; greater share of federal and state budgets used for healthcare leading to cuts in other areas. Rising costs make US industry less competitive and weaken economy.
EU stability	**Governance succeeds.** EU resolves sovereign debt issues and continues to be Washington fourth largest export market for goods.	**Euro breakdown.** Unresolved sovereign debt issues create systemic global risk and weaken economic recovery. Exports to EU decline.
Defense spending	**Defense redefined.** Resources shift toward asymmetric threats, e.g., cyber warfare, terrorism, revolutionary movements, infrastructure protection. Opportunities in areas of WA technological strength.	**Steep cuts in defense.** Under this scenario base closures and sharp reduction in defense. WA bases at high risk. However, WA could benefit through repositioning of defense missions and assets to manage Pacific Rim threats and technological threats.
Climate change	**Less severe**. WA gradually reduces carbon footprint through energy efficiency and shift to renewables. WA leads in clean technologies with modest job gains. Fossil fuel production and transit remains large factor.	**Worst expectations.** Glaciers continue to melt; sea levels rise, more volatile weather patterns. Artic shipping lanes open. WA agriculture output increases. Acceleration of clean energy and smart grid solutions which helps WA economy.



III. Where We Need to Go: Five Pillars

Washington State needs to implement an economic growth strategy to restore the thousands of jobs lost to the recession and create thousands of more jobs to accommodate population growth over the coming decade. What is clear is that in many industries the same jobs will not be coming back. Hoping for "cyclical recovery" and just relying on a national economic recovery would be a mistake. Given the national policy stasis and massive federal deficit, we should not expect any substantial funding relief from Washington, D.C. Our economy is facing profound occupational adjustments, new global competitors and disruptive innovations. We have to implement a new paradigm for economic development and focus on the factors and outcomes that matter now. Simply put, the state has no choice but to be the source of policy creativity.

The longer-term state deficit outlook is forcing us to think through policy priorities and reforms to manage our own economic recovery. Attention will necessarily focus on the immediate- and the short-term. Spending cuts will be necessary to deal with an unprecedented budget deficit. Government services need to be rationalized, streamlined, and lean management practices adopted across all agencies to achieve higher levels of productivity, efficiency and outcomes.

The biggest opportunity is to transform our economic development model and the policies that drive it. The economic development system is today too short-term oriented, disjointed and uncoordinated. The result is a lot of effort that is sub-optimal, diffused and inefficient. The strategies we advance present an opportunity to overcome this fragmented, reactive approach to economic development. Our approach is aimed at overcoming these deficiencies by applying a set of principles that:

- Shifts resources to higher-value economic development programs.
- Distributes public resources to local priorities and supports innovation where it is happening.
- Focuses on strengthening regional relationships and innovation ecosystems.
- Leverages and aligns public and private resources.
- Fosters a multi-disciplinary, collaborative and open approach to innovation.
- Accountable for outcomes

The architecture of the economic development system must be driven by private- sector jobs creation and fueled by investment in innovation, workforce skills, a modern infrastructure, exports and a smarter regulatory system. This requires a fundamental reset of policy focusing on the talent we need, innovating in what matters, producing and manufacturing more of what we invent and exporting more. No single institution will lead the way. The next economy will be led not from the top, but from the bottom up.

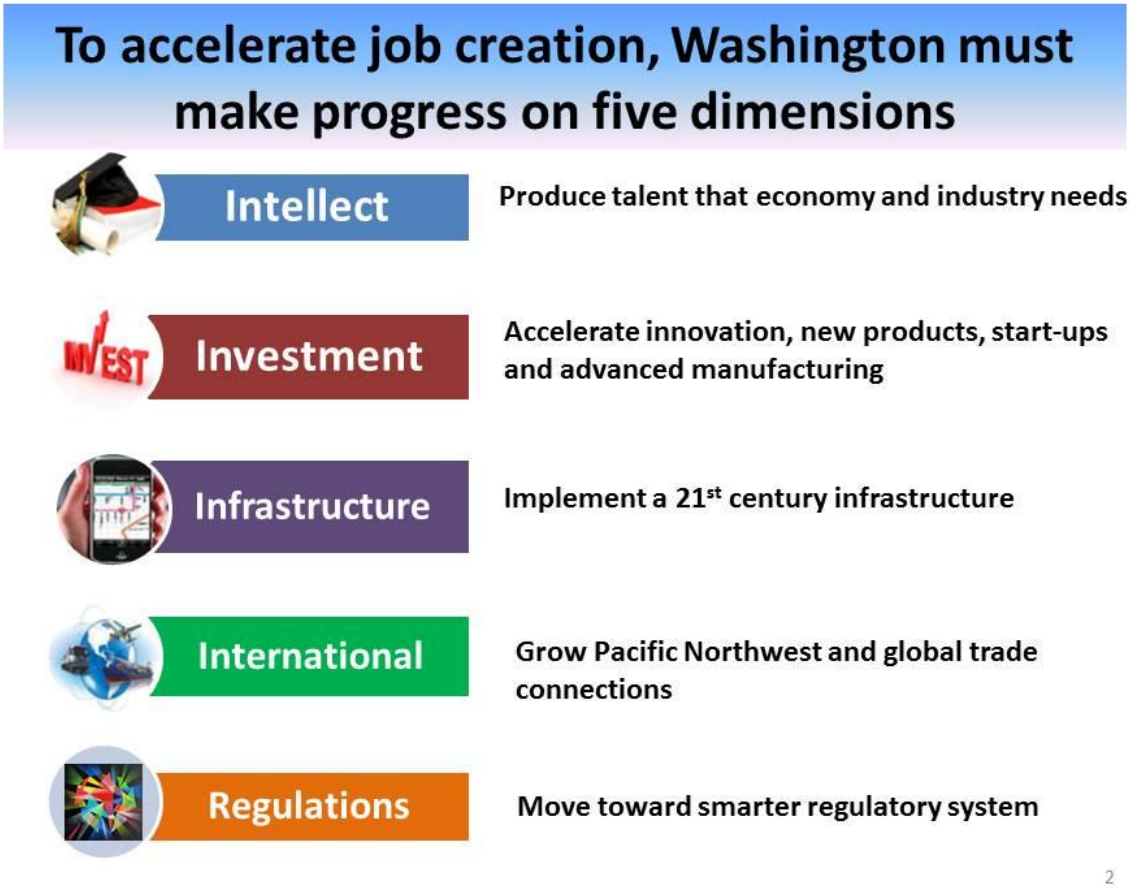
Building a World-Class Innovation Ecosystem



Fortunately, our state economy is very diverse and has substantial leadership and innovation assets upon which to build. It will be the local economies that will be the hubs or nodes of economic revival – they will be the centers for collaboration, talent, investment, and innovation.

We see an opportunity for leaders in business, government, research, and education across Washington to step forward to implement revolutionary – not incremental – change. Countless organizations, communities and innovators thinking and interacting in a larger system, of which they are a part, will evolve the future innovation economy. This capability of seeing the economic development system as a whole – and collaborating across boundaries – will be the essential insight and tool for the state's future prosperity.

To accelerate job creation, we must make progress on four pillars of our innovation ecosystem: talent; investment and entrepreneurship; infrastructure and regulation; and international business. This framework has proven to be useful in building consensus, formulating our policy recommendations, coordinating with other agencies, communicating to the public, and catalyzing action at the local level. The Commission's analysis and recommendations are presented in next section.





Pillar One: Harness Talent to Win the Future Skills Race

Why This is Important

Jobs and wages are directly related to the productivity of our workforce. Contrary to popular opinion, there are thousands of job openings requiring highly skilled and knowledgeable workers that are vacant because job applicants do not have the particular skills and knowledge that employers require. Unless Washington produces more workers with the skill and knowledge competencies that employers need, Washington will experience a growing skills gap that will slow economic recovery. Use of sophisticated technologies and globalization have increased the demand for highly skilled workers and reduced the demand for workers without relevant skills. Compounding the challenge is an educational system that has failed to produce workers with education levels required in the 21st century economy. Concerns about the quality and quantity of human capital center not only on students emerging from school, but also on older workers whose skills need retooling to adapt to a rapidly changing occupational structure.

This challenge is recognized and is being discussed by educational foundations, state governments, national higher education associations, and policy councils. The Lumina Foundation for Education is providing leadership by calling for the United States to increase higher education attainment rates, the proportion of the population that holds a high-quality post-secondary degree or credential, to 60 percent of the working age population by 2025; Lumina refers to this as their "BIG GOAL."

In February 2009, Lumina issued its first *Stronger Nation* report on higher education attainment in the country and for each state, which focused the nation on a new conversation about education attainment. Under Gov. Gregoire's leadership, the National Governors Association's top priority was to increase completion rates in postsecondary education. The association authored a report, *Complete to Compete*, which is influencing policy in Washington State as we address a new governance structure to help ensure student achievement at both the secondary and post-secondary levels.

Where Washington State Stands

- In 2008, 42 percent of adults in Washington had college degrees. For Washington to reach the BIG GOAL, community and technical colleges, and four-year colleges and universities will need to award more than 700,000 additional degrees and credentials by 2025. It is interesting to note that the state has attracted 92 degreed workers from out of state for every 100 we produce through our educational system.
- According to Georgetown University Center on Education and the Workforce, 67 percent of Washington's jobs will require post-secondary education by 2018. Between now and 2018, Washington will need to fill more than one million vacancies resulting from job creation, worker retirements and other factors. Of these vacancies, 677,000 will require a post-secondary credential, while only 351,000 will need to be filled by high school graduates or dropouts. Providing sufficient talent for the workforce will require significant increases in college attainment among working adults, low-income, first-generation students, and students of color.



- Attainment rates vary by population group, from a high of 52.9 for Asian students to a low of 17.3 for Hispanic students. Attainment rate for Caucasians is 44.6 percent of adults ages 25-64.
- In 2010, Washington was in the bottom quartile of states in secondary school on-time graduation at just 73.7 percent; this compares with the national average of 75.5 percent. Washington ranked 16th in 2011 for average eighth grade National Assessment of Educational Progress (NAEP) mathematics scores.
- Washington fares well in terms of the workforce in life, physical and social science occupations, such as biologists, medical scientists, chemists, and environmental scientists. Roughly 1.4 percent of the workforce in 2010 was concentrated in these occupations, good for ninth highest in the nation. Washington's share of the workforce in architectural and engineering occupations was the third highest in the country at 2.9 percent.
- The state does not perform as well on the availability of workers on the fabrication, production and installation segment, despite the vast aerospace footprint in the state. The supply of these workers is a major concern among aerospace and other manufacturing firms and suppliers across the state.

Future Assumptions

- Talent is the principle driver of the innovation economy.
- Productivity and earning capacity will increasingly be tied to skill levels. Wages will remain flat or decline for those with a poor education and few skills.
- Education system needs adequate resources to meet immediate business needs and to underpin a robust, long term economic recovery.
- Washington will remain attractive to immigrants, most of whom bring high education and skill levels with them. This will require state residents to compete with national and international talent pools.

Recommendation # 1

Expand the capacity of community and technical colleges and four-year universities and colleges to achieve a post-secondary education attainment rate of at least 60 percent (degrees and credentials) of the working-age population by the year 2025 to ensure a productive workforce and meet high-demand industry needs.

- Higher education quality must be defined in terms of student outcomes – the quality and relevance of degrees and other credentials. These degrees and credentials must be explicit and transparent to all.
- Policymakers must be able to allocate resources based on required outcomes, and employers must be able to hire graduates with confidence. If a high-quality credential is what students need, then a highly productive higher education system is how we reach the BIG GOAL. For Washington to reach the 60 percent goal, community and technical colleges, and four-year colleges and universities will need to award more than 700,000 additional degrees. Degree and credential production will need to increase by approximately 5,500 – a 5.9 annual percentage increase – each year. If our state continues to increase attainment at the rate we did between 2000 and 2008,



we will have a college attainment rate of 49 percent in 2025 – well short of the BIG GOAL of 60 percent.

- Significant changes in the higher education system will be needed. New funding models will be required to build capacity addressing high-demand programs, costs will need to be contained, and resources will need to be reallocated to increase student success. We must have more students complete their certificates and degrees in high-quality programs focusing on high-return occupations. Higher education must use technology to improve lower-cost innovative options for delivering course work that is affordable to the students. High-quality information systems must be available to inform decisions about how to serve the required number of students more effectively.

One excellent place to begin looking for these additional graduates is in the ranks of Washington residents who have completed some college without earning a degree. In 2008, 950,000 Washington residents fit into this category – representing more than 26 percent of the state's adult population. If only a small portion of this group could be enticed to return to college to complete either a two- or four-year degree, it would go a long way to helping Washington reach the goal of 60 percent higher education attainment. Also, by looking at the geographic distribution of college graduates within the state, policymakers and other stakeholders can begin to work strategically and systematically to close achievement gaps.

Recommendation # 2

Prioritize career and technical education programs at the high school level through more interaction with business, support of skill centers, and making use of industry standards for curriculum development and career guidance.

The current recession should not be the time to lose ground on enhancing the pool of qualified workers. Technically trained workers are needed in almost every major industry sector. A long-term commitment for a skilled, flexible and technically competent workforce would inspire business confidence and help attract, retain and expand industry in the state. We should shift resources from our system of education-employment-lifelong learning to areas of high-demand, and facilitate entry of more Washingtonians into the high-skills jobs that are being created. It is paramount we increase Science, Technology, Engineering and Mathematics (STEM) proficiencies, provide education opportunities where skill gaps exist, and do it efficiently. We must increase and maintain budget support for post-secondary education institutions to flexibly address industry workforce needs in high-demand occupations. There are about 60,000 job vacancies currently; many of these jobs are unfilled because applicants lack the appropriate skills. More effort is needed to integrate employer needs into education programs, use "skills panels" and provide more career pathways through industry "stackable" skills certificate programs.

- **Improve labor market demand and education supply analysis.** Tracking demand for specific labor force education or training at the state, regional and local employer levels is the first step to acquiring the appropriate educational and training resources. Tracking includes several components, including current and projected growth and job openings. Federal, state and local statistical sources should be complemented by regional surveys and intensified interactions between employers and high schools, community and technical colleges, and four-year universities



and colleges. This will help in determining a reliable demand-and-supply analysis for disciplines and degrees in specified labor markets. The demand-and-supply analysis should identify significant gaps between employer demands for workers in specific disciplines and the available supply of educational resources. In addition, it is important to track actual outcomes – the transition of students from education-to-employment would determine if needs are being met and how effective current education and workforce programs are.

- **Expand work-based education programs, including apprenticeships.** Provide more "direct connect" training, which includes high school and college internship programs, on-the-job training, state-of-the-art apprenticeships, and employer-designed skill standards and training. Early exposure to the work world will assist students with effective career choices. The coming manufacturing era, as exemplified by the resurging aerospace industry in Washington, offers the prospect of landing middle-income jobs, creative work and long-term career opportunities for students not necessarily on a four-year college degree track. We should track the transition from education-to-employment for college graduates, including how many find jobs in the state and how many leave or are unable to find employment. For in-state employers, we should track how many offer internships and how many of those interns are hired for at least one year or longer.

- **Give credit for prior experience.** Education institutions and employers should recognize and give credit for prior learning experience, particularly in the case of military personnel entering the civilian workforce with applied skills and valuable occupational competencies.

- **Enhance STEM proficiencies starting in high school, including applied STEM offerings.** Support high school programs to graduate more students with real world problem-solving and STEM proficiencies, and establish more rigorous standards for science and math teachers. The Governor's "Launch Year" program, skills centers and "Project Lead the Way" courses are examples of promising strategies to engage more high school students in STEM and problem-solving disciplines.

- **Expand use of online learning.** As a leading information technology, smart phone, interactive media, cloud applications, and software development hub, Washington has enormous potential to become a global leader in online education. Online learning, in combination with more traditional teaching methods and rigorous competency assessment, has enormous promise to expand access to learning resources and the possibility of lowering the burden-of-education costs to resource-intensive curriculum.

- **Help students and experienced workers navigate career choices through up-to-date career counseling, personalized information, and access to learning resources and business internships.** Encourage more interaction between industry executives and career counseling resources and make use of social media to crowd-source, integrate and personalize real-time knowledge about career outlooks, job opportunities and options for skills certification. Special career and technical programs are needed for older workers and veterans leaving military service.



Recommendation # 3

Attract and retain the world's best and brightest minds and entrepreneurs to fill critical skills gaps and grow new enterprises, including greater funding for higher education tied to high demand programs and fact-based visa related reform

Recommendation # 4

Expand flexibility of unemployment programs to fund skill development and training of dislocated workers and the long-term unemployed.

Help dislocated workers utilize transferable skills and upgrade skills to fill vacancies created by the restructuring of the economy, and provide the unemployed with learning opportunities to get the skills needed by businesses. Approximately 300,000 unemployed people in Washington are searching for work, and a growing proportion are running out of unemployment benefits. Continue the shift of the unemployment insurance system from temporary income support toward pathways for apprenticeships, training benefits and career transition would help return dislocated workers to the workforce.



Pillar Two: Invest in Entrepreneurship and Small Business

Why This is Important

The path from an entrepreneurial concept to the marketplace can be quite complex, involving the "push" of new ideas and the "pull" of the market; it is neither linear nor predictable. Although Washington reaps significant economic benefits from its entrepreneurial culture and research activities, our future as a global center of innovation depends on accelerating the commercialization process. Start-up companies and the formation of new regional innovation clusters is the long-term, jobs-creation engine of our economy. According to the Kauffman Foundation,[13] most new jobs are created by firms less than five years old, including both technology-based ventures and traditional small business start-ups. According to the U.S. Small Business Administration[14], small business (defined as those having less than 500 employees):

- Represent 99.7 percent of all employer firms.
- Employ half of all private sector employees.
- Pay 44 percent of total U.S. private payroll.
- Generated 65 percent of net new jobs over the past 17 years.
- Create more than half of the nonfarm private GDP.
- Hire 43 percent of high tech workers (scientists, engineers, computer programmers, and others).
- Are 52 percent home-based and 2 percent franchises.
- Made up 97.5 percent of identified exporters and produced 31 percent of export value in FY 2008.
- Produce 13 times more patents per employee than large patenting firms.

Washington State should strengthen the innovation ecosystem that connects researchers, entrepreneurs, mentors, angel/venture funding, incubators and manufacturers, and put in place a robust one-stop shopping support system for small businesses beyond what is being offered by federal and private-sector programs.

Where Washington Stands

Strengths in research and development, and intellectual property need to be more strongly integrated with start-up and commercialization activity.

Human Capital

- Washington ranks second among the states in the proportion of scientists and engineers in the workforce, with much of this talent "imported" from other states.
- Washington ranks 32nd in per capita production of advanced scientific and engineering degrees, and 31st in the advanced-degree growth rate for the 2004-2009.

[13] Source: http://www.kauffman.org/newsroom/u-s-job-growth-driven-entirely-by-startups.aspx

[14] Source: http://web.sba.gov/faqs/faqIndexAll.cfm?areaid=24 - U.S. Dept. of Commerce, Census Bureau and Intl. Trade Admin.; Advocacy-funded research by Kathryn Kobe, 2007 (www.sba.gov/advo/research/rs299.pdf) and CHI Research, 2003 (www.sba.gov/advo/research/rs225.pdf); U.S. Dept. of Labor, Bureau of Labor Statistics.



- Washington ranks ninth in high-tech jobs in the manufacturing, software, computer-related services, telecommunications and biomedical industries.
- Washington ranks 12th among the states for the availability of knowledge-based managers, professionals and technicians.

Research and Development

- Washington ranks fourth among the states in R&D intensity – 4.9 percent of state GDP.
- Washington ranks second among the states in the amount of increase of federal R&D investment – 136 percent to $4.7 billion between 2002-2007. This far exceeds the national increase in R&D of 33 percent.
- The Department of Defense is the major federal R&D funder, providing 71.2 percent of the R&D in the state.
- Washington ranks first in the percentage of federal R&D dedicated to industry performers (69.5 percent) and is seventh in overall industry funded R&D.[15]
- The University of Washington ranked first among public research universities in federal R&D it performed in 2007.
- Washington ranks first for patents produced (171.2 patents per 100,000 workers); an impressive 88.9 percent increase during 2004-2009 compared to national growth of 2.4 percent.

Commercialization Activity

- Washington typically ranks in the top five states in the nation in venture capital funding, behind perennial leaders California and Massachusetts, and competitive with New York and Texas.
- Washington ranks 14th among the states for both Small Business Innovation Research (SBIR) Phase 1 proposals submitted (451) and awards won (90), and 16th for an award-to-proposal conversion rate of 20 percent.
- Washington ranks 10th on the Fast 500 and Inc. 500 lists, with Massachusetts, Virginia, Utah, Maryland and Connecticut comprising the top five.
- Washington ranks 26th among the states in IPO offerings as a share of total worker earnings.
- Washington ranks 31st in manufacturing foreign direct investment (FDI), with Delaware, South Carolina, Connecticut, New Hampshire, and New Jersey having the greatest share of workforce employed by foreign companies.

In summary, Washington ranks very well on many knowledge-creation attributes and less so in commercialization activity. We need to foster more cultivation of home-grown talent and commercialization activity, especially among small business, to create companies with the potential to grow innovation clusters with substantial employment.

[15] Source: NSF, Survey of Federal Funds for R&D. 2009 Annual Report



Future Assumptions

- Economic growth and job creation relies increasingly on commercializing new knowledge into globally competitive products, processes and services.
- University research centers, federal labs and private R&D teams need to be connected to a robust innovation ecosystem, including manufacturing investment.
- Access to business expertise and risk-tolerant capital for early stage enterprises and scale-up are essential for rapid technology deployment.

Recommendation #1

Target improvements to regulatory and tax policy to foster growth of start-ups and innovative business clusters.

- **Provide incentives for emerging technology** clusters via an enhanced Innovation Partnership Cluster program that pulls companies and researchers together to attack problems with both societal and economic benefits; for example, clean water, cyber security, biomedical, clean energy, next-generation manufacturing, and agriculture technology. One approach for financing faster cluster growth and job creation is by incremental sharing of tax revenues or fees above a specified growth rate for investment in industry-directed collaborative projects such as R&D, workforce training and export development. Industry associations have expressed strong interest and support for this concept.
- **Provide operational support for Innovation Partnership Zones (IPZ)** and capital projects that are aligned with IPZ business plans**.** Fourteen IPZs are presently designated by the state to accelerate the growth of regional innovation clusters. Provide a minimum of $1 million (competitively awarded) to strengthen the internal and external relationships necessary for collaborative innovation. State funding should be 50 percent matched by the local IPZ and its partners. The state should invest and support capital projects that are integral to achieving IPZ objectives, innovation infrastructure and business plans.
- **Reduce start-up costs wherever possible.** The state Department of Commerce (Commerce), in collaboration with the Department of Revenue, should examine ways to reduce start-ups costs, such as deferral of Business and Occupation (B&O) taxes until the firm is profitable. Other strategies for early-stage financing include granting tax credits to qualified angel investors for the early stages of a start-up. A study should be conducted on the potential risks and benefits of investing a small portion of state pension fund assets in promising high growth, innovation-based companies.
- **Remove regulatory barriers for new technology development and start-ups.** The regulatory environment can pose formidable cost, administrative and time barriers to start-ups. There are numerous examples of small business enterprises stymied in moving forward with investments because regulatory requirements and standards were not flexible or timely enough to accommodate the introduction of a new technology. Commerce and the state Office of Regulatory Affairs should undertake an assessment of state and federal regulatory processes confronting technology-based start-ups, the testing and certification of innovative prototypes, and large-scale deployment of new-to-market products, processes and systems.
- **Shift the structure of B&O incentives** from the past practice of a patchwork of open-ended incentives to reward industries, clusters or sectors that are growing faster than population growth.



- **Make permanent state tax incentives for R&D and advanced/high tech manufacturing** for both existing and emerging companies and industries.
- **Extend the aerospace tax incentive for pre-production expenses** of the Boeing 737 MAX from 2024 to 2034 to align to expected production duration and lifecycle.

Recommendation #2

Accelerate innovation by proactive support of small business and the best entrepreneurial ideas and talent.

- **Expand and focus resources for early-stage start-ups** by encouraging and supporting the wide variety of organizations that fuel the Washington innovation ecosystem, including Innovate Washington, the Northwest Entrepreneur Network, the Washington State Microenterprise Association, the Washington Technology Industry Association, the Washington Biotechnology and Biomedical Association, Enterprise Seattle, etc. Early-stage entrepreneurial assistance services are highly fragmented and should be harmonized with unifying themes. With appropriate governance and oversight, Innovate Washington should take the lead in efficiently coordinating such services, and assisting start-ups in business planning, mentoring and identifying sources of financing – complementing existing services from federal and private-sector programs, such as the SBA.
- **Expand the Entrepreneur-in-Residence (EIR) program** at our research universities to team-up researchers with business professionals. Expand the EIR concept to additional research sites such as federal laboratories, industry R&D centers and innovation partnership zones.
- **Expand the STARs program** to continue to attract world-class research teams in emerging technology areas with broad commercial potential. The program currently generates a return of more than $5 in federal and private sector funds for every $1 invested. Complete the state's commitment to recruit 10 world-class innovation research teams in areas of high commercial and job-creation potential. Support the creation of a Center for Aerospace Technology Innovation at UW and WSU. Expand the scope and economic relevance of STARs through private sector matching funding.

Recommendation #3

Enhance the Washington innovation ecosystem through large-scale collaboration and competing aggressively for federal, foundation and investment funding.

- **Compete for federal R&D** in areas of commercialization potential, including more multi-organizational research projects between universities, national labs and the private sector. The state should encourage more proposal development for large cooperative innovation projects, and provide matching resources that may be required. The University of Washington continues to be the leading federal R&D recipient among public universities, but its growth rate has fallen well behind other institutions that are striving to catch up.
- **Support a strong regional SBIR program** through Innovate Washington and university commercialization offices to leverage federal dollars for commercialization activities.
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- **Provide access to "gap funding"** for developing technologies to evaluate their commercial potential and get them ready for external funding. Due to the recession and downturn in the IPO market, venture capital has become more difficult to acquire in the earliest stages of technology development and firm formation.
- **Support the University of Washington "W Fund**" and other early-stage funds that provide initial funding for promising start-ups in the state.
- **Provide assistance in pursuing SBA grants and loans** for emerging small businesses in Washington that may not have access to university gap and spin-out funding.
- **Consider incentive programs to bring jobs and investment into Washington** by companies not headquartered in the state, including both U.S. corporations and foreign direct-investment opportunities. Washington's growing base of research and commercialization activity, our Pacific Rim location, the quality of life and the efforts taken ensuring an education system to deliver the human talent required are all draws to companies in other regions which should be exploited.
- **Launch a robust FDI initiative** in partnership with the EB5 regional centers and overseas representatives to attract foreign and out-of-state investment and support immigrant investors.



Pillar Three: Modernize Infrastructure

Why This is Important

- Leveraging the innovation, manufacturing, service, and agriculture assets of the state requires a modern infrastructure capable of moving people, goods and ideas efficiently. Productivity is closely tied to infrastructure systems.
- Vulnerabilities in oil supply and the externalities associated with carbon-based fuel sources will drive change in the energy portfolio of the world.
- Infrastructure systems that support the adoption of cleaner energy sources will create more opportunities to make Washington a research, development and commercialization center for new technologies and growth of clean-technology industry clusters.
- Access to broadband infrastructure is critical to the development of rural and distressed areas and bridging the digital divide in our state. Furthermore,
- Broadband is an enabling platform for rapidly growing business sectors such as interactive media, e-commerce, social networking, online education, health IT systems and delivery of public services.

Where Washington Stands

Washington has ranked well compared to other states in its share of bridges deemed structurally obsolete (sixth lowest share) and 11th lowest in vehicle miles traveled per resident. However, we ran 42nd for *functionally* obsolete bridges and 16th for roads that are in "good" or "very good" condition. Washington has one of the busiest port systems in the nation, with more than $164.1 billion in goods passing through customs in our state in 2011. However, more competition and further growth of international trade is adding stress to the system. Washington State ranks number one in the nation for broadband adoption, network speeds and economic structure according to a recent study released by **TechNet**, a network of CEOs and senior executives that promote the growth of technology-led innovation. The study cites leadership, planning, cooperation and state funding as keys to this success.[16]

Future Assumptions

- Overall levels of public infrastructure spending will likely fall as stimulus programs wind down and the public sector addresses fiscal restraints.
- Infrastructure investments will give higher priority for economic development objectives.
- Freight mobility is a growing problem for manufacturers and supply chain efficiency
- Various economic, national security, climate, and technological trends will accelerate the transition to alternative energy sources and electric transportation systems.
- Communications infrastructure will continue to be primarily a private-sector activity.

[16] TechNet: 2012 State Broadband Index report



Recommendation #1

Develop alternative, sustainable financing mechanisms for transportation infrastructure to ensure basic asset preservation and investment in critical economic corridors to expedite commerce and trade.

Current revenue sources are not sustainable going forward. The vast majority of investments to date are for preservation of the existing transportation system, with little left over to build out new, business productivity-enhancing facilities and expansions. Moreover, existing funding sources for general transportation projects are on a downward trend. The fuel tax will continue to contract as a revenue source as drivers shift to electric cars, higher fuel economy vehicles and alternative modes of transportation. For instance, between March 2007 and 2023, fuel tax revenues are projected to fall by more than $5 billion, and the elimination of the Motor Vehicle Excise Tax will cut annual revenues by another $750 million. Since 2001, real funding for maintenance and operations of the existing transportation system declined 49 percent, while construction costs have risen 77 percent. Sales tax revenues, which provide 70 percent of the funding for local transit agencies, declined sharply during the current recession.

- **The state must devise long-term transportation financing mechanisms** that ensure sufficient funds available to invest in important bottlenecks in each of our state's economic corridors. The Connecting Washington Task Force identified several possible, state-level alternative revenue sources, including an electric vehicle fee, a gross vehicle weight fee and a vehicle-miles-traveled tax.[17]

Recommendation #2

Prioritize infrastructure investments of national significance that can make Washington a global leader in areas such as energy efficiency, clean-water solutions, advanced manufacturing, sustainable urban design, and broadband deployment.

- **Work with the congressional delegation and other regions** to ensure a fully-funded federal transportation reauthorization act that includes a national freight mobility program. Leverage the Washington State congressional delegation to improve statewide access to federal infrastructure programs, including in energy, transportation and broadband.
- **Partner with other regions as joint pilot locations for nationally significant investments.** Such investments can both bring in additional needed infrastructure dollars and raise Washington's competitiveness vis-à-vis other major economies around the world.

Recommendation #3

Require the use of economic development and sustainability criteria in the state's capital budgeting process and selecting project investments.

- **Focus infrastructure projects on economic development benefits.** Of the hundreds of projects currently underway, the vast majority are for safety, maintenance and preservation. These projects are important, but there needs to be a new emphasis on economic development. One approach would

[17] To view the complete list of potential funding sources, see table 9 (page 22) in the Connecting Washington report (2012), http://www.governor.wa.gov/priorities/transportation/connect/final_report.pdf.



be to identify infrastructure bottlenecks that directly affect employment-based industry clusters around the state. Some of these needs include funding of freight-related road projects, rail corridor expansion and future airport capacity**.**

- **Improve economic development impact analysis for infrastructure projects.** To foster linkages to economic development, better data is needed on how infrastructure systems impact business productivity and performance. For example, there is no universally accepted best practice for evaluating the economic development impact of transportation projects. We recommend organizing a collaborative effort between the Commerce, Ecology and Transportation departments to establish a meaningful set of metrics that help policymakers understand critical areas in need of investment for economic development; currently available data is very limited.
- **Embrace technological innovations across infrastructure investments** – e.g., broadband, highway, and electric grid – to grow Washington's economic corridors**.** Expanding the state's broadband network is critical to assisting underserved areas and accommodating explosive growth in digital products and services, collaborative activity, big data, health care, and education. Commerce has already initiated efforts to track the impacts of broadband on local communities and regional economies. Continue to support data collection and tracking, and use findings to inform continued state funding for broadband after federal ARRA funding expires.



Pillar Four: Expand International Business

Why This is Important

- Exports create good paying jobs. Households continue to deleverage, dampening the role of domestic consumption in national economic growth for the foreseeable future.
- Over the coming years and decades, global growth will be driven by economies outside the United States, including China, Brazil and India.
- Washington is well positioned to be a center of global commerce in goods, services and ideas – not simply surviving in a globalized economy, but thriving in it.
- A robust exporting sector will provide new opportunities for innovation and business growth, and be a substantial driver of job creation.
- Services exports are a large and growing component of the Washington economy.

Where Washington Stands

- Washington merchandise and commodities exports ("goods exports") in 2011 were $64.6 billion, an increase of 21.1 percent over 2010.
- Following a decline in 2010, aerospace exports reached $27.2 billion in 2011, a 16.5 percent increase over 2010.
- After removing soy, corn and rice exports (which are only consolidated in Washington and not grown in the state), Washington exported $58.1 billion in 2011, a 24.3 percent increase over 2010.
- Agriculture and food exports (stripping out soy, corn and rice) surged 37.3 percent in 2011, reaching $8.6 billion. Wheat exports reached $2.8 billion, a 122.9 percent increase over 2010.

Future Assumptions

- Globalization – the interconnectedness of markets for goods, services, capital and labor – will continue to intensify over time, but at an uneven and unpredictable pace.
- State capitalism (e.g., China) is rising as a source of competition.
- Washington ports will confront more competition from Canada, California and East Coast ports as the Panama Canal is widened and potentially new Arctic shipping lanes open.
- Slow economic recovery in the United States and uncertainty in global economic conditions will increase protectionist pressure and threaten to escalate trade disputes into high-risk trade wars.
- State fiscal constraints will challenge policymakers to seek creative new partnerships with the private sector to promote export growth.

The following recommendations will help increase Washington's international competitiveness and realize the goals of the Governor's State Export Initiative to increase the number of exporting companies by 30 percent and provide export assistance to 5,000 businesses to help them achieve $600 million in new export sales by 2015.



Recommendation #1

Intensify innovation collaboration in the Pacific Northwest economic region by supporting cross-border research and development projects that can lead to commercialization, diversification and expansion of trade opportunities.

- **Open new pathways for job creation by intensifying cross-border policy development.** Washington is the economic hub of the greater Pacific Northwest region, which if it were one country would make it the 14th largest in the world. We should improve collaboration with neighboring states and Canadian provinces in such areas as research partnerships, access to education, venture capital, transportation, energy management, water resources, climate change, regulatory harmonization, immigration and trade. As a first step toward implementation the WEDC organized and hosted the *Pacific Northwest Economic Summit* in September 2012 as a featured event during the 50th Anniversary Celebration of the 1962 World's Fair. To view the agenda, commentary and entire webcast go to: www.pacficnwinnovation.com/

Recommendation #2

Optimize through a state-regional-private partnership the export assistance ecosystem by providing a coordinated suite of demand-driven services and global trade connections to Washington State companies.

- **Synchronize the state's international business promotional activity** with regional agencies that promote international business. The state should work to coordinate efforts with associations and local economic development organizations. We are in a time of limited resource. Through improved collaboration and coordination the state can achieve better economies of scale, to the benefit of state exporters.
- **Facilitate the creation of a private sector-led export support council**. Activities should include regular meetings among stakeholders and partners to:
    - Clarify each entity's core competencies and strengths.
    - Share information and jointly strategize ways to expand the number of exporting companies and attract additional federal money.
    - Jointly convey this system to companies across the state.
    - Function in tandem with Commerce's Export Working Group but focus more on direct client engagement
- **Leverage existing international partnerships and linkages** among the state's multinational corporations (MNCs) to help other firms connect with exporting opportunities. Many of the state's largest companies have strong international linkages beyond their direct business, offering potential exporting opportunities for SMEs in the state. The departments of Commerce and Agriculture should work with these MNCs to identify these opportunities and broker introductions with SMEs.



Recommendation #3

Strengthen export assistance services and re-establish overseas representation to augment Washington's international competitiveness and realize the state's export goals.

In fiscal year 2011, the state Department of Commerce's (Commerce) export assistance program supported export sales of $147.5 million. Based on updated calculations equating $185,000 in export sales with one job, this export assistance supported up to 797 jobs last year. The state Department of Agriculture supported export sales of $94.3 million in fiscal year 2011, supporting an estimated 754 jobs[18] and helping generate $3.78 million in tax revenue ($2.79 million more than the program's state-funded budget).

A total of 7,963 companies exported from Washington locations in 2009 (most recently available data). Of those, 7,193 (90 percent) were small- and medium-sized enterprises with fewer than 500 employees. More job creation can be realized – only 4 percent of Washington's small- and medium-sized goods producers export today

- **Invest more aggressively in export assistance** and ensure adequate overseas representation of our state economic interests. Instead of curtailing our export assistance efforts, we should be aggressively moving forward to penetrate new markets and promote our innovative culture, investment opportunities, and products and services. Having a greater overseas presence also raises Washington's profile as a place to invest.
- **Expand application of Export Vouchers**. Commerce pilot tested export vouchers through use of the SBA State Trade and Export Promotion (STEP) grant and is a promising technique for efficiently allocating export assistance services for specific company needs.

Recommendation #4

Double the number of state-led, new-to-market, cluster-based trade missions (including services industries) to increase the number of new-to-market exporting firms.

- **Increase trade missions** to provide crucial introductions to prospective overseas buyers. The state usually leads between two and four trade missions a year (including Governor's delegations and agency-led missions). These missions are particularly valuable and impactful in emerging economies where state capitalism plays a significant role in commerce. Government leaders working with the needs of specific industry clusters can open doors and business opportunities otherwise closed to Small and Medium Sized Enterprises (SMEs).

[18] A different ratio is used to calculate jobs created though food and agriculture exports. According to the U.S. Department of Agriculture, every $1 billion of food and agriculture export sales represents 8,000 jobs (2010), a ratio of eight jobs for every $1 million in exports.



Pillar Five: Move to Smart Regulations

Why This is Important

- The regulatory environment has an enormous influence on the timing, location, and cost of investment, facilities, staffing and hiring decisions.
- Regulation is not only about the rules, but *compliance*. Streamlining compliance will help firms save costs without compromising the protections intended.
- From a private sector perspective regulatory issues have a significant bearing on start-up, expansion, and relocation decisions.
- A "high quality" regulatory environment can simultaneously facilitate innovation, economic growth and efficiently achieve regulatory objectives.

Where Washington Stands

Community based stakeholder surveys completed by the WEDC have shown that Washington's overly burdensome regulatory system must be addressed as a top economic development priority. Forbes magazine produces a widely read ranking of the business environment for the 50 states. Washington's rankings of 20th with respect to the regulatory environment, 21st as to business costs, and 26th on Quality of Life are economic development concerns **(Table 3)**.[19]

Table 3. Forbes Best States for Doing Business, 2011

Overall Rank	State	Business costs rank	Labor supply rank	Regulatory environment rank	Economic client rank	Growth prospects rank	Quality of life rank	Population
1	Utah	10	5	8	11	10	14	2,800,200
2	Virginia	23	2	2	8	25	4	8,077,700
3	North Carolina	2	3	1	20	15	34	9,633,900
4	North Dakota	4	24	21	2	11	21	677,900
5	Colorado	32	1	15	10	8	10	5,092,100
6	Texas	24	15	4	1	1	35	25,472,200
7	**Washington**	**21**	**6**	**20**	**7**	**5**	**26**	**6,777,900**
8	Nebraska	3	29	24	6	34	12	1,837,000
9	Oregon	15	10	38	22	8	27	3,872,700
10	Iowa	8	41	11	16	41	11	3,051,800

The current system for compliance information is fragmented and incomplete, adding additional costs to businesses. In 2012, the State Auditor's Office (SAO) reviewed nearly 1,400 state-level permits, licenses, and inspections. Among its findings, the report found that there is no central portal sufficiently comprehensive to clearly and easily guide businesses through the regulatory compliance process, despite

[19] Regulatory environment as measured by Forbes state business environment rankings includes an index from Pollina Corporate Real Estate that measures tax incentives and the economic development efforts of each state. Other metrics include the Tort Liability Index from Pacific Research Foundation, as well as the regulatory component of PRI's U.S. Economic Freedom Index. Other factors include Moody's bond rating on the state's general obligation debt and the transportation infrastructure including air, highway and rail. Credit is given to those states that are right-to-work states.



the creation of three separate "one-stop-shop" portals dedicated to providing this information. The report also found that complete regulatory information for 57 of the most requested permits and licenses was not available on these sites and only 23 percent of permits and licenses provide online information.20 A business in Washington must sift through a growing maze of laws, regulations and administrative processes at all levels of government—Federal, state and local. This system burdens the regulated entity in terms of money and time delays and particularly small businesses who find it difficult to pay the costs of staff, experts, consultants, attorneys in order to comply. Furthermore, when a business faces the prospect not being in compliance it must deal with a variety of perils-- fines, penalties and even the possibility of jail. Despite this pressing problem and numerous attempts by governors and legislators to reform the system "Washington is a long way from the one-stop vision state leaders endorsed."

Future Assumptions

- Regulatory processes impose costs-of-doing business, and significantly influence investment behavior, location decisions, start-up activity, expansions and hiring.
- Regulation is not only about the rules, but compliance. Streamlining saves costs without compromising the protections intended.
- A smart regulatory system can simultaneously facilitate innovation, economic growth and efficiently achieve regulatory objectives.

Recommendation #1

Implement an "across government" strategy to dynamically move toward a smart, high quality regulatory system that promotes innovation, lowers business costs, provides predictability and efficiently supports regulatory objectives.

The time has come to take on the regulatory challenge in a comprehensive and systematic manner. We are recommending an aggressive strategy to move the state toward a high quality and smart regulatory system.

- **Promulgate a definition of regulatory quality to guide rule-making and regulatory processes** through executive action or legislation. Regulatory quality refers to the degree in which regulations are necessary because of market failure, that alternative solutions to regulatory intervention are not feasible, that regulations are efficient in terms of their total economic costs and clearly measured social benefits, and the regulatory compliance process is timely, transparent, non-duplicative and accountable.

[20] Washington State Auditor's Office (SAO), "Regulatory Reform: Communicating Regulatory Information and Streamlining Business Rules," Report No. 1008276, 6 September 2012.



Recommendation #2

Expand agency use of lean process improvements to lower the cost of regulatory compliance and reduce time delays.

Regulatory compliance costs rise to the surface of concerns of businesses across the state. We can find better ways to maintain and even improve our ability to protect the environment, public health and safety, and workplace protections while reducing the costs and complexity of compliance.

- **Apply lean management principles to regulatory compliance processes** so as not to impose unnecessary costs-of-doing business.
- **Support single-access portals for permitting and compliance information** that are aligned across state departments and agencies.

Recommendation #3

Create "concierge service" for industry engagement and a comprehensive, well-designed, interactive online portal to navigate regulatory compliance as recommended by State Auditor's Office Regulatory Reform report.

- **Create a concierge service for proactively assisting businesses** navigate the complexities in the regulatory environment in a timely and efficient manner.
- **Design a comprehensive, one-stop-shop business portal** that allows companies to easily navigate the regulatory compliance system as recommended by the State Auditor's Report on Regulatory Reform. This portal should function similar to the one provided by Turbo Tax—an interactive, selection-based process that includes all permits, licenses, and inspection scheduling, rather than incomplete list of hyperlinks. The site should be reviewed and updated every year by a joint committee representing all agencies at the state level with custodianship over regulations
- **Address key compliance processes required of young, growing businesses**; optimize access to regulatory compliance resources.
- **Leverage broadband networks to deliver their services more cost effectively**. Direct the broadband office in Commerce to help local governments figure out how to better; doing so will help to provide a low-cost model for sustaining their networks in rural communities.

Recommendation #4

Create a legislative task force to review annually by industry sector—in conjunction with the State Auditor's Office and Joint Legislative Audit and Review Committee (JLARC) –



all regulations at the state level and determine overlaps, excessive costs, obsolescence, redundancy, and recommend solutions.

- **Convene local and federal officials** to assess where conflicts exists between local, state, and federal regulations and propose solutions that do not compromise the intended purpose of the regulations.
- **Eliminate state agency scope overlap and streamline decision-making processes** for regulatory approval and permitting applications. Support single-access portals for permitting and compliance information that are aligned across state departments and agencies.

- **Survey the business community to identify regulatory barriers** and remove those that measurably reduce the ability of the business community to invest and grow, while not fulfilling their intended public policy purpose. The state should focus on the minimum regulation necessary to maintain health and safety, and limit environmental impacts, with the goal of promoting the highest level of efficient and innovative economic development and business growth.



State's Role in Growing Washington's Defense Economy

The scale and impact of Washington State's defense-related economy has not been measured since 2004, and the State has never had an explicit strategy for supporting and growing its substantial defense-related businesses. According to study commissioned by the WEDC, the full economic impacts of defense related spending, including direct, indirect, and induced effects is estimated to have created nearly $12.2[1] billion in total output in the State. This activity supported approximately 191,600 jobs and nearly $10.5 billion of labor income in the State in 2009. Total jobs and labor income resulting from the economic impacts of defense spending are approximately 7% and 8% of State totals respectively. The above findings clearly demonstrate quantitatively the significance of Washington's defense economy, but the defense community also plays an important economic role in other ways:

- Provide employment opportunities for a very wide range of individuals, from relatively low-skilled to the construction trades to highly skilled knowledge workers.
- Provide an ongoing supply of skilled workers in the form of retiring military personnel.
- Provide defense contracting opportunities constitute the bulk of some Washington companies' work, and provide important supplementary markets for firms whose principal focus is not defense.
- Generate defense-related technologies that can be transitioned to civilian applications.

Defense purchasing has generally not been subject to the rises and falls of the consumer economy, and so provides a stable base for communities and contractors that supply these needs. However with the wind-down of wars in Afghanistan and Iraq and federal deficit pressures, the state faces a higher risk of downsizing in installations, personnel and contracting activity. The following are strategies that draw on the Washington State's ability to play the following roles:

- **Policymaker.** The State has direct influence over important policy levers that can be utilized to facilitate a strong defense-related economy in Washington. Making defense an explicit focus in the State's economic development strategy will ensure that defense-related issues and opportunities are integrated into economic development decision making processes.
- **Promoter and advocate.** The State has the ability to promote the importance and capabilities of Washington's defense economy, and advocate for specific initiatives by creating a high level central focus point in state government to participate in key defense industry trade meetings and build stronger relationships in Washington DC.
- **Information provider.** In addition to general advocacy, the State can compile, analyze, and propagate information and market opportunities, sharing this information with its economic development partners and the private sector.
- **Innovation broker.** Trends in national defense strategy create opportunities for building innovative partnerships with Washington based business and research centers.
    - Potential decline in defense budget, while the West Coast becomes important strategic location.
    - Focus on smaller scale threats and responses and on emerging technologies.
    - Focus on energy efficiency, water reduction and alternative energy production.
    - Ongoing role in peacekeeping and nation building.
    - Caring for wounded warriors and development of innovative treatments and devices.
- **Catalytic funder.** The State can provide funding that can make a substantial difference, even if applied in small amounts particularly in working with the state Procurement Technical Assistance Centers (PTACs), ADO network, Innovation Partnership Zones, Pacific Northwest Defense Coalition and Washington Defense Partnership. Targeted funds can help nurture defense cluster initiatives and support R&D, small business, contract and procurement opportunities.

[1] **Washington State's Defense Economy: Measuring and Growing its Impact**. Prepared for the WEDC by Berk & Associates, September 2010.



IV. A World-Class Innovation Ecosystem

Our state is bristling with innovative clusters and a selected portfolio is highlighted in the graphic below. The potential for growing and scaling this portfolio is enormous. It directs our policymaking to the grounded interactions by which real companies in real places work on developing their business, serving customers, managing supply chains, developing employees, designing new products and expanding their markets. The regional level includes the education system; the entrepreneurs and infrastructure to move people, goods, ideas and energy efficiently; and the institutions to educate and train the workforce of the future. The federal government is also embracing regional innovation clusters as a national framework for economic development. The network of Innovation Partnerships Zones shown below is a great example of their power to fuel regional leadership and innovation toward a new economy.



Talent. The talent pools we create in the state should be available to innovators no matter where they choose to locate. Whether acting as service providers or independent agents, individuals with specialized skills can make those skills widely accessible outside of traditional metropolitan markets.

Innovation and Entrepreneurship. The seeds of innovation are everywhere in the state and we can help them blossom by bringing the basic elements of innovation ecosystem to them. Entrepreneurs should not have to travel far to gain access to knowledge and services they need to move their ideas into the marketplace.

Infrastructure. The networks of entrepreneurs and service providers are all linked through infrastructure. Products and people move along transportation corridors, ideas move along information corridors, and the state connects to the world through ports and airports.

Globalization. Networks of globally-connected people and organizations allow entrepreneurs anywhere in the state to access world markets.

At the center of our effort to evolve Washington into the world's greatest innovation ecosystem are openness, communication and cooperation. We need to break down the silos of organization that limit the scope of our activities and we need to break down the geographical barriers that keep us confined to our respective areas of the state. The synergistic opportunities are huge, but only if we stop thinking about programs, boundaries and distances, and start thinking about flexible, open statewide networks that move resources efficiently to the people and places driving innovation.

In sum, future prosperity will not come from through rigid programs directed from Olympia or Seattle, but from flexible, nimble management of policy and resources in response to exciting developments happening anywhere in the state.

Implementation: What Results Are We Seeking?

If the recommendations are successfully implemented, we are confident that business performance will be enhanced, jobs will be generated, higher wages will be paid, and exports will increase. Furthermore, these measures will:

- Prepare a skilled, flexible and adaptable workforce for high-demand occupations, and scaling up of regional innovation clusters.
- Accelerate industry/university/lab commercialization, new product development, productivity improvement, and export expansion.
- Diversify Washington's economic base with knowledge-intensive companies.
- Strengthen collaboration between innovation clusters and avoid costly duplication of assets and effort.
- Position the state to educate, attract and retain world class research and entrepreneurial talent.
- Compete for an increased share of federal, state and private investments in science, technology and start-up companies.



- Ensure that adequate financing tools are available for next generation infrastructure, such as alternative energy, broadband and electric transportation.
- Align public policies and funding mechanisms to respond flexibly to regional economic growth and job creation priorities.

The Commission's recommendations are not all dependent on new funding; what is more important is making funding more predictable and more flexible. In particular, we call for more "local leadership" and financing tools at the regional level to raise necessary capital for each region's unique economic development objectives and priorities. We also consider it essential for the business community to take a more active strategic leadership role for the industries and clusters in which they participate.

Our vision for Washington is a place where citizens have access to the best learning resources in the world and are encouraged to capitalize on their abilities to create prosperity for themselves and for others. It is a place that has a global outlook, looking to emerging markets and nurturing collaboration across its diverse geography and industry clusters. It is a place that is a magnet for creative and entrepreneurial people and enterprises – where innovation is open and everyone can participate and share in its benefits.



Appendix 1

Excerpts of Senate Bill 5741 passed by the Washington State Legislature
Signed by Governor Christine Gregoire – May 10, 2011

The legislature finds that in order to achieve long-term global competitiveness, prosperity, and economic opportunity for all the state's citizens, Washington must become the most attractive, creative, and fertile investment environment for innovation in the world.

The legislature finds that the state must take a strategic approach to fostering an innovation economy, and that success will be driven by public and private sector leaders who are committed to developing and advocating a shared vision and collaborating across organizational and geographic boundaries. The legislature therefore intends to create an economic development commission that will provide planning, coordination, evaluation, monitoring, and policy analysis and development for the state economic development system as a whole, and advice to the governor and legislature concerning the state economic development system.

The Washington State Economic Development Commission is established to assist the governor and legislature by providing leadership, direction, and guidance on a long-term and systematic approach to economic development that will result in enduring global competitiveness, prosperity, and economic opportunity for all the state's citizens.

(1) The commission must concentrate its major efforts on strategic planning, policy research and analysis, advocacy, evaluation, and promoting coordination and collaboration.

(2) During each regular legislative session, the commission must consult with appropriate legislative committees about the state's economic development needs and opportunities.

(3) (a) By October 1 of each even-numbered year, the commission must submit to the governor and legislature a biennial comprehensive statewide economic development strategy with a report on progress from the previous comprehensive strategy.

(b) The comprehensive statewide economic development strategy must include the industry clusters in the state and the strategic clusters targeted by the commission for economic development efforts. The commission must consult with the workforce training and education coordinating board and include labor market and economic information by the employment security department in developing the list of clusters and strategic clusters that meet the criteria identified by the working group convened by the economic development commission and the workforce training and education coordinating board under chapter 43.330 RCW.

(4) (a) In developing the comprehensive statewide economic development strategy, the commission must use, but may not be limited to economic, labor market, and populations trend reports in office of financial management forecasts; the annual state economic climate report prepared by the economic



climate council; joint office of financial management and employment security department labor force, industry employment, and occupational forecasts; the results of scientifically based outcome evaluations; the needs of industry associations, industry clusters, businesses, and employees as evidenced in formal surveys and other input

(b) The comprehensive statewide economic development strategy may include:

(i) An assessment of the state's economic vitality;

(ii) Recommended goals, objectives, and priorities for the next biennium, and the future;

(iii) A common set of outcomes and benchmarks for the economic development system as a whole;

(iv) Recommendations for removing barriers and promoting collaboration among participants in the innovation ecosystem;

(v) An inventory of existing relevant programs compiled by the commission from materials submitted by agencies;

(vi) Recommendations for expanding, discontinuing, or redirecting existing programs, or adding new programs; and

(vii) Recommendations of best practices and public and private sector roles in implementing the comprehensive statewide economic development strategy.

(5) In developing the biennial statewide economic development strategy, plans, inventories, assessments, and policy research, the commission must consult, collaborate, and coordinate with relevant state agencies, private sector businesses, nonprofit organizations involved in economic development, trade associations, and relevant local organizations in order to avoid duplication of effort.

(6) State agencies must cooperate with the commission and provide information as the commission may reasonably request.



Appendix 2

Innovation Partnership Zones

IPZ | Washington State Innovation Partnership Zones

Innovation Partnership Zones (IPZs), launched in 2007 by the Washington State Legislature, consist of 15 designated "hot spots" in the state. The IPZs develop new technology, new partnerships between public, research institutions and the globally competitive firms. The current IPZs, with diverse focuses, are administered by the Washington State Department of Commerce, and are integral to the development of the "grass-roots" economic development ecosystem of Washington State.

AUBURN

Urban Business Center for Innovative Partnerships

Innovations and new business markets through public / private research partnerships and the reinvention of industrial properties into market affordable mixed use business clusters. Contact Doug Lein at (253) 804-3101

BELLINGHAM

Waterfront Innovation Zone

Industrial design, advanced materials and fuel technologies in areas such as clean transportation, marine and renewable energy. Contact Dodd Snodgrass at (360) 676-2500

BOTHELL

Bothell Biomedical Manufacturing Innovation Partnership Zone

Promoting the growth and expansion of the biomedical manufacturing cluster, including med tech and pharmaceutical companies, through programs centered on branding, funding, networking, education and secondary industry support. Contact Terrie Battuello at (425) 489-3387

CLALLAM COUNTY

North Olympic Peninsula Innovation Partnership Zone

Ocean energy research, technology engineering and development, maritime deployment, operations and maintenance that will deliver sustainable renewable energy from the region's coastline to the region, state and west coast. Contact Linda Rotmark at (360) 457-7793

GRAYS HARBOR

Grays Harbor Innovation Partnership Zone

Advanced manufacturing clusters with research and development focus on biofuels and bio-based product manufacturing. Contact Mary Nelson at (360) 533-9504

KING COUNTY

King County Financial Services Collaborative

Growing the financial services industry through regulatory changes, workforce education, domestic and international marketing/promotion, and product differentiation. Contact Jeff Marcell at (206) 389-8654

KITTITAS COUNTY

Central Washington Resource Energy Collaborative

Renewable energy technologies development, particularly wind and solar. Contact Tony Aronica at 509-962-7244



PULLMAN

Pullman Innovation Partnership Zone

Clean information technology and datacenter technologies, smart grid technologies, smart farm and smart home technologies. Contact Don Tilton at (509) 552-5116

REDMOND

Interactive Media and Digital Arts Innovation Partnership Zone

Fostering an interactive media and digital arts cluster through education, research, workforce development, entrepreneurship workshops and events, and creation of a regional interactive media accelerator. Contact John Marchione at (425) 556-2101 or Jeff Marcell at (206) 389-8654

SEATTLE

South Lake Union Global Health Innovation Partnership Zone

Vaccine and immunology research, cancer research, infectious disease research, medical devices and health technologies. Contact Tina Vlasaty at (206) 684-3348

SNOHOMISH COUNTY

Aerospace Convergence Zone

Research in new materials and processes for aircraft production. Contact Mary Jane Brell Vujovic at (425) 921- 3405

SPOKANE

Spokane University District Innovation Partnership Zone

Biomedical research such as computational biology, bioinformatics, systems biology, epigenetics, genomics, chromosomal biology, and drug discovery and clean energy technologies. Contact Robin Toth at (509) 321-3636

TACOMA

Urban Clean Water Technology Zone

Clean water research and technology transfer including analysis of water pollution in urban environments, stormwater management practices, clean water management applications and policy development. Contact Martha Anderson at (253) 591-5207

TRI-CITIES

Tri-Cities Research District

Research in sustainable development, with focus on integrated electrical-thermal production, solar dish generating systems, and commercial-scale fuel cells. Contact Diahann Howard at (509) 375-3060

WALLA WALLA

Walla Walla Valley Innovation Partnership Zone

Water conservation and management, wine and hospitality cluster, and alternative energy. Contact Tim McCarty at (509) 527-4540

For more information about this program, please contact:
Mary Trimaro
mary.trimarco@commerce



Appendix 3

Strategic Targeted Academic Research (STARS)

The Strategically Targeted Academic Researchers program (STARS) began in 2007. The state of Washington provides support for the recruitment of entrepreneurial researchers, bringing individuals with the knowledge, skills and ability to generate research products and innovations with direct commercial applications. The program fosters both product innovation and longer-term statewide economic development. The strategic direction of the STARS program is managed by the Washington Economic Development Commission (WEDC), which also oversees the performance criteria of the program.

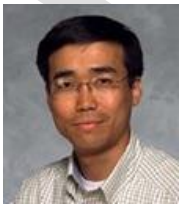
The WEDC, working with the Washington Education and Training Coordinating Board, is chartered to recruit 10 lead entrepreneurial researchers over the 10-year period, 2007-2017. As of Winter 2012, six STARS had been recruited.

University of Washington - STARS

*Michael Hochberg, UW
Nanophotonics

Daniel Kirchen, UW
Smart Grid

Jonathan Posner, UW
Next Generation Batteries & Fuel Cells



Jihui Yang, UW
Next Generation Batteries & Energy Recovery

Brandon Pierquet
Design of electronic systems power electronics

Washington State University - STARS

Birgitte Ahring, WSU
Biofuels

Chen-Cheng Liu, WSU
Smart Grid

Building a World-Class Innovation Ecosystem



STARS is designed to bolster the state's innovation capacity in emerging technology fields with high commercial potential. The STARS program has incorporated the WEDC's definition of innovation as the process of transforming an idea into a commercial product, process or service that has value to a customer. If the technology is commercially successful, the downstream economic benefits are significant: increases in revenues, exports, jobs, incomes, and wealth creation. By building on the strengths of the state's research universities across a number of disciplines, Washington can shape the direction of emerging technologies and foster the critical relationships for commercialization. The STARS program today is already evolving into a larger innovation ecosystem that is characterized by:

- Early interaction between research and business as a key commercial success factor.
- Integration of technical advances (push) with emerging market demand (pull).
- Leveraging of federal and private sector R&D.
- Collaboration as a core competency for business partnerships, networks and investors.
- Entrepreneurship as a vital ingredient.
- New sources of growth and competitive advantage.

The STARS advisory committee recommended, and the WEDC has established, that during each biennial funding cycle, first-year funding goes to the recruitment package for a STAR, followed by one year of support for the newly hired researcher. It is important to note that although the STARS program benefits the researcher for only two years, the STARS team continues to accumulate return-on-investment well beyond the initial investment.

STARS Program Performance Metrics

Recruiting

Number of STARS researchers recruited
Number of STARS researchers hired
Size of STARS teams

Activity

Number of scholarly publications
Number of inter-institutional collaborations
Number of Entrepreneurs in Residence

Impact

Research dollars from federal sources and foundations
Research dollars from industry
Tech startups based on STARS technology
First-round investment in tech startups
Total investment in tech startups
Licenses of STARS technology to third parties

Review

Satisfaction survey
Number of jobs created

To date each dollar invested by Washington has leveraged approximately $4.
Quarterly program reports are posted on the Washington STARS website: www.WASTARS.org



Appendix 4

Entrepreneurs-in-Residence (EIRs)

Entrepreneurs-in-Residence capitalize on Washington's strong entrepreneurship history by housing leading, locally based entrepreneurial executives directly at the universities to collaborate with university researchers. The entrepreneurs contribute necessary expertise for transforming research and intellectual property into viable business strategies, plans and start-ups. After a short period of operation, the program has seen dozens of potential spin-outs in the pipeline converting university intellectual property into private businesses and jobs. The EIR also provide an expert resource for the university's other initiatives that foster entrepreneurship and industry relations. EIRs are seasoned entrepreneurs and business executives working "shoulder-to-shoulder" with researchers whose work may have commercial relevance. They collaborate with start-up teams on identified business opportunities. These industry experts provide expertise, guiding teams on product development and market development efforts as they explore funding opportunities and staffing needs. This collaboration, and coordinating of resources, evolves ideas from initial concept all the way through to first-stage start-up financing, and is a new direction for encouraging intellectual property to "spin-out" into private sector businesses.

In 2011, the Legislature expanded the EIRs program by adding a regional Entrepreneurs-in-Residence. The pilot regional EIR, working closely with the Northwest Innovation Resource Center, is located in the Whatcom County area, working to identify and commercialize intellectual property at non-research institutions and mobilize the community to launch new startups.

Current University of Washington Entrepreneurs-in-Residence

Rob Arnold – cloud computing and Internet security solutions.
William R. Baker – cardiovascular and anti-infective drugs.
Ronald Berenson, medical oncologist – mAb-based therapeutic products used to treat cancer, biopharmaceuticals, antibody-based immunotherapies. and commercialized stem cell harvesting methodologies for hematology and oncology applications.
Lars Johansson – Cleantech angel investor, Energy/Cleantech space, and IT
Michael "Luni" Libes – mobile market research and analysis, enterprise collaboration systems, pen computing, PDAs, and early smart phones
Ken Myer – extensive knowledge of the state's technology sector, led companies ranging from startups to those at the Fortune 100 level, worldwide marketing, sales, technical, and customer service teams. Works with faculty on information technology-related research that might have licensing or new company opportunities.
Ted Weiler – R&D and marketing of medical devices, development and clinical application of unique technologies in ultrasound, defibrillator monitors, products for the pediatric, surgery, inhalation therapy, as neonatal neurology products for the detection and treatment of brain injury.
Chris Wood – 3D medical image visualization and image guided surgery, CAD detection for Breast MRI holding several of his own patents in the areas of image post processing, registration, CAD and visualization.



Emeritus UW EIRs

Stephanie Amoss, Healthcare and Medical Device Consultant
Henry Berg, Engineering Executive and Former Director at A3 Alliance, LLC
Gino Borland, Serial Entrepreneur and Energy Angel Investor
Terri Butler, technology entrepreneur, former product developer at 3M Company
Jeff Canin, energy angel investor, former venture capitalist, investment banker, and Wall Street analyst and co-founder of 3 energy related companies
Tom Clement, co-founder and former CEO of Pathway Medical Technologies and board chairman of the WBBA
David Croniser, former pioneer of Diagnostic Imaging at Siemens
Michael Cockrill, managing partner of Atlas Accelerator and former CTO of QPass
Perry Fell, board chairman and former CEO of NanoString Technologies and co-founder of Seattle Genetics
Alex St. John, founder of Wild Tangent and former Microsoft gaming evangelist
David Kaplan, electric vehicle entrepreneur previously at GridPoint
Deborah Kessler, former senior executive at Acucela and Rosetta Inpharmatics
Richard Mander, former executive at Apple, Human Ware, and Big Screen Live
Thomas Schulte, veteran of medical device research and development at BD
Bob Wilcox, former senior biomedical executive at EKOS and LifeSpex

Current: Washington State University Entrepreneurs-in-Residence:

Kevin Petersen – Food Chain Safety (FCS) commercial deployment of Microwave Sterilization technology.
Lewis Rumpler – M3 Biotechnology around Joseph Wright and Jay Harding's anti-dementia, anti-cancer, anti-angiogenic, and pro-wound healing technologies.
Robert E. Schilling – Mayfield Bioscience, a company created around John Alderete's Trichomonas test technology.
Karen Fleckner –Nu Element, Inc, based on Su Ha's fuel cell systems technology.
Tom Murphy – Positron Analytical Services, a company created around Kelvin Lynn's semi-conductor inspection technologies.
Therus Kolff – development of a commercial opportunity around a novel CZT composition developed in Kelvin's Lynn's lab. CZT is a semiconductor material that is used in systems that detect gamma-ray's.
Dan Leatzow – is focused on the development of microfluidic separation devices for the detection and quantization of low-abundance biomolecules. The underlying technologies from Neil Ivory's lab provide the means for the selective concentration and quantization of specific cardiac biomarkers for early stage detection of acute cardiovascular stress.
Justin Thornley – working toward the initial tests needed to achieve FDA approval for Sankar and Uma Jayaram's WSU bone and joint replacement technologies under the company Intellepedics.



Current Regional Entrepreneurs in Residence at Northwest Innovation Resource Center
NWIRC has signed an agreement with the MBA program in the College of Business and Economics (CBE) at Western Washington University (WWU) to provide students the opportunity for applied experience working with local entrepreneurs

John (Skip) Dise – Skip is currently working with Clean Power Research (a privately-held software company designing tools for solar) in Kirkland, where he is studying the effect of high penetration solar on the forecast penalty structure within a load balancing area.
Satpal Sidhu – is currently President / Chief Operating Officer of Sunlogics Inc. / Epod Solar Inc. Kelowna, BC. It is a solar power generation and solar modules manufacturing company engaged in development and construction of rooftop and utility scale solar power installations in USA, Canada, Germany, UK and China. In his role of managing overall company operations, he has managed development and construction of a 10 MW Solar Power project in Ontario, Canada, participated in the preparations for the public stock offering and liaison with financial institutions / investor groups, developed project plans to establish solar module manufacturing plants in Germany and USA.

Entrepreneurs-in-Residence Program Performance Metrics

Activity
Number of scholarly publications
Number of inter-institutional collaborations
Number of Entrepreneurs in Residence

Impact
Research dollars from federal sources and foundations
Research dollars from industry
Tech startups based on institutions/regions technology
First-round investment in tech startups
Total investment in tech startups
Licenses of institutions/regions technology to third parties

Review
Satisfaction survey
# of jobs created

Quarterly program reports of the are posted on the Washington STARS website: www.WASTARS.org



Appendix 5

WEDC Policy Research Projects Completed

Defense Department: Connecting to Opportunities

The biggest potential customer for innovation in Washington is the U.S. Department of Defense. This research project quantified the enormous impact of the defense cluster on Washington's economy and points to ways businesses in the state can capture more of that value. The study found that the military contributed a total of $12.2 billion (2009 data) to the state's economy, accounting for 8 percent of labor income and 4 percent of total economic activity. But in spite of all this spending the state has not done a good overall job of highlighting the impact of the military on the state and connecting the military with businesses in the state to maximize opportunities. The report made a number of recommendations for the state to expand its partnership with the defense cluster.
Washington State's Defense Economy: Measuring and Growing its Impact.

Manufacturing: Building on Strengths

This project described some of the troubling trends in manufacturing and provides recommendations on how to reverse them. Sustaining innovation in manufacturing requires a strong focus on R&D and a continued influx of talent and capital. The final report discusses the major challenges facing workforce development, including demographic shifts, the growing skills gaps and promoting manufacturing as a viable career choice. Maintaining an adequate infrastructure in transportation, energy and broadband are also essential for maintaining a strong manufacturing base in Washington. The report calls on a new emphasis to increase exports by small- and medium-sized businesses.
Washington State Manufacturing Within the Global Market.

Electric Vehicles: The Case for Regulatory and Policy Modernization

A challenge for innovators is fitting new technologies and products into existing regulatory and policy frameworks. Few areas illustrate this better than the process of shifting our nation's vehicle fleet from petroleum power to electric power. This project showed that Washington has the potential to be at the center of this revolution, taking advantage of our information technology resources, green power and progressive consumers. This report discusses a strategy for positioning Washington as the leader in this new industry. ***Electrification of Transportation: An Economic Development Road Map.***

Federal Funding: Breaking Down the Silos

The federal government provides billions of dollars in funding each year to promote various initiatives related to economic development, but accessing this funding can be a source of real frustration. Programs are housed in individual federal agencies, creating silos that appeal to very specific actions, but do not consider the whole impact of a project. New efforts are being made to break down these silos and direct money to fostering "innovation clusters." This project detailed the thinking behind innovation clusters and recommends actions the state can take to increase the chances of success in competing for funding.
Regional Innovation C lusters: A Strategy to Compete for Federal Funds.



Policy Innovations Around the World

This research project addressed economic development practices around the nation and the world in four areas critical to the state's future competitiveness – expanding exports, attracting talent, nurturing innovation and entrepreneurship, and promoting life sciences. A key WEDC objective is actively learning from the world what policy ideas are working and considering their merits for adoption in Washington State. This report begins to fill in this picture by benchmarking innovation policies of other states and nations and recommends several ways Washington could improve its performance. A number of the policy innovations became the basis for legislative action, including using CERB funds for export assistance, improving online tools for export assistance, creating mechanisms for self-financing cluster development, extending the state R&D tax credit, promoting the EB-5 immigrant investor program, and STEM related education initiatives. ***Innovation Policy: Opportunities for Washington***

Measuring the Washington Innovation Economy

A successful economic development strategy, be it for a nation, state, region or business, must be supported by sound assessments of the competitive situation and an effective system for measuring progress and results. The WEDC collaborated with state agencies and economic experts to define the most useful metrics for tracking performance in five broad categories: talent, investment, infrastructure, exports, business operations and public impact. The WEDC intention is to shape a consensus on a shared dashboard of innovation metrics. High quality, relevant and timely metrics that recognize the interrelated dynamics of innovation will help inform policymakers and public on the benefits of innovation and strategies to realize these benefits**.** ***Indicators for the Washington Innovation Economy***

Economic Development Programs: Impact and Value

WEDC completed in 2011 a second comprehensive survey of state economic development programs, and found that 32 state agencies manage over $2 billion annually across 126 programs related to economic development. This work has set the stage for undertaking the first-ever across the board program impact evaluation. WEDC boosted its research capability by hiring in 2012 its first policy director with the principle mission of completing state-of-the art evaluations of economic development programs.
Economic Development Inventory: A Review of State Agency Programs (2008-2011)

Washington State Financial Services Cluster Study

The WEDC was the lead sponsor for a study to characterize the composition, size and competitiveness of the state's financial industry. In 2010, the Washington State Financial Services Cluster included 131,800 jobs. This figure includes 110,800 jobs at more than 8,200 employment establishments and an additional 21,000 independent advisors and professionals. The Financial Services Cluster spans six subsectors, which align with the U.S. Census Bureau's North American Industrial Classification System. The subsectors include: Accounting; Banking; Credit and Lending; Financial Investing; Insurance; and Public Finance. Two well attended Financial Industry Summits organized by **enterpriseSeattle** were completed, and a strategic plan for growing the cluster is in the implementation process.
Washington State Financial Services Cluster Study



Appendix 6

Summary of High Level Metrics

Indicator	Metric	Rank	Latest	Data Trend	Description
OVERALL ECONOMY					
Real GDP growth	2.1%	14	2011	↑	Trend line, 2000-2011
Per capita GDP	0.8%	25	2011	→	Trend line growth, 2000-2011
Jobs recovery	3.5%	13	Jul-12	↑	Change Dec 2007 nadir to July 2012
Reduction in unemployment rate	0.6 ppts	28	Aug-12	→	Year-over-year rate
Median household income	-9.8%	35	2011	↓	Change between 2007-2011
ICT employment change	4.3%	1	2011	↑	2007-2011
Manufacturing employment change	2.4%	2	2011	↑	2007-2011
Life sciences—employment change	12.2%	1	2011	↑	Among 20 largest life science states
TALENT					
8th Grade Basic Math	76%	21	2011	→	Basic or above in math, 8th grade
8th Grade Basic Reading	77%	26	2011	→	Basic or above in reading, 8th grade
8th Grade Proficiency Math	40%	12	2011	↑	Proficient in math, 8th grade
8th Grade Proficiency Reading	37%	13	2011	↑	Proficient in reading, 8th grade
Percent HS degree or higher	89.9%	25	2011	→	Of 25-44 year-olds
Percent BA degree or higher	32.6%	18	2011	→	Of 25-44 year-olds
STEM –computer & math workers	16.0%	11	2011	↑	Change 2007-2011
STEM workforce Location Quotient	1.30	3	2011	→	2011
STEM workforce annual earnings	$85,933	8	2011	↑	2011
INVESTMENT					
SBIR & STTR awards	$139.30	13	2011	→	$ awarded per $1M in nominal GDP
Venture capital investment per capita	$79.33	5	2011	↓	
R&D % of state GDP	5%	6	2008	↑	Among 10 largest recipients overall
Patents trend	8.8%	1	2011	↑	All types growth 1998-2011
Start-ups rate of growth	-34.8%	35	2010	→	2006-2010



INFRASTRUCTURE					
Percent functional obsolete bridges	20.0%	41	2011	↑	
Percent structurally deficient bridges	5.0%	6	2011	↑	
Vehicle miles traveled per capita	8,482	11	2010	→	
Roads in good or very good condition		16	2011	→	
INTERNATIONAL BUSINESS					
Exports in Non-aerospace, non-agric.	6.4%	26	2011	↑	Trend annual per capita growth since 2000
FDI Jobs	4.0%	33	2009	→	Employment in FDI firms as share of total covered employment



ACKNOWLEDGEMENTS

This strategy report would not have been possible without the focused leadership of WEDC chair Roger Woodworth and the generous time and expertise provided by Commission members. We wish to acknowledge contributions of our four working groups, which worked collaboratively and effectively to understand and address complex economic, technological and policy issues entwined with growing the states innovative capacity and future prosperity.

Talent & Workforce	Investment & Entrepreneurship	Infrastructure & Regulations	International Business
Steve Van Ausdle, Chair	**Rick LeFaivre, Chair**	**Connie Bacon, Chair**	**William Stafford, Chair**
Randy Gardiner	**Jack Breese**	**Christina Lomasney**	**Dan Newhouse**
Michael Baumgartner	**Roger Woodworth**	**Paula Hammond**	**Rogers Weed**
Eleni Papadakis	**Mark Harris**	**Bruce Kendall**	**Mike Schwenk**
Phyllis Kenney	**Paul Trause**	**Norma Smith**	**Stan Sorscher**
Beth Thew	**Michelle Burris**		

In addition, we thank the staff of the commission that provided essential intellectual, policy and administrative support. Egils Milbergs provided the overall strategic framework and helped drive the Commission's deliberations toward meaningful action recommendations. Noreen Hoban prepared the materials for all commission and working group meetings, managed critical stakeholder relationships and played the major role in editing, formatting and production of the report. Spencer Cohen provided much of the economic data in the report and methods for assessing the impact of state economic development programs. We also wish to thank the Washington State Department of Commerce/Research Services for its editorial support.



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